

## Aufgabensammlung: Balken und Rahmen

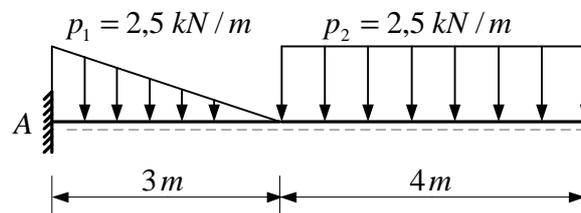
### Aufgabenstellung:

(Stand: 14.01.2010)

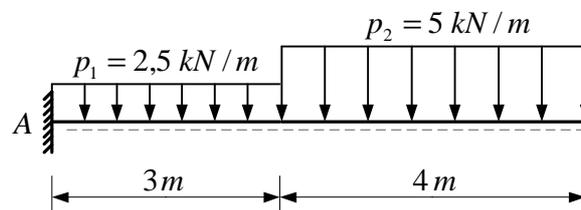
Ermitteln Sie alle Auflagerreaktionen und die Verläufe der Schnittgrößen (Normalkraft, Querkraft, Biegemoment) für die dargestellten Tragwerke und stellen Sie diese graphisch dar. Geben Sie alle relevanten Werte an.

Hinweis: Beachten Sie, dass ein maximales Feldmoment dort entsteht, wo die Querkraft gleich Null ist. Ermitteln Sie diese Stelle und das zugehörige maximale Feldmoment wenn notwendig ebenfalls.

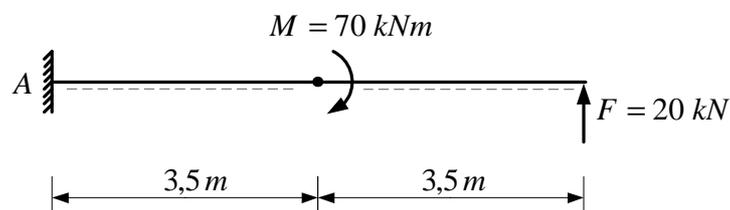
### Aufgabe 1



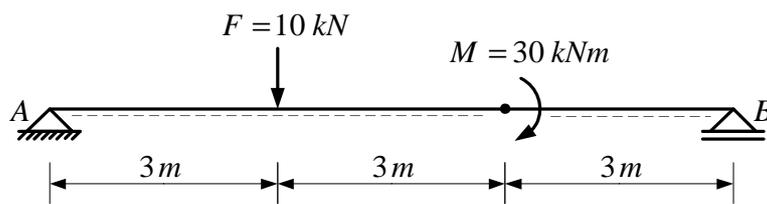
### Aufgabe 2



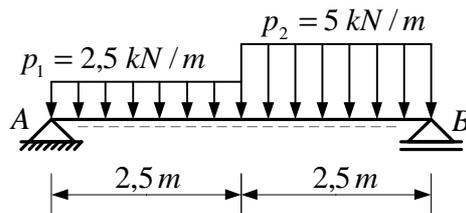
### Aufgabe 3



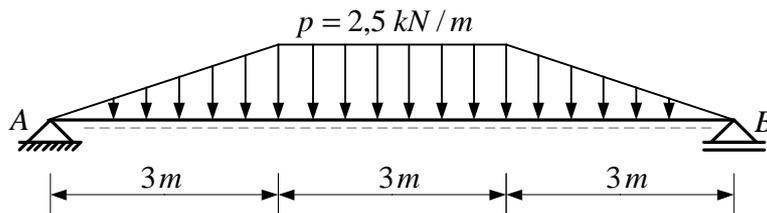
**Aufgabe 4**



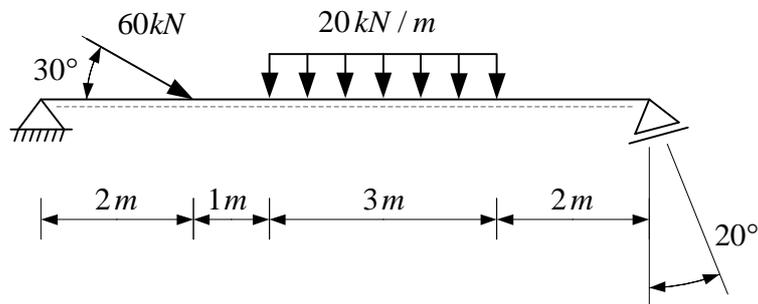
**Aufgabe 5**



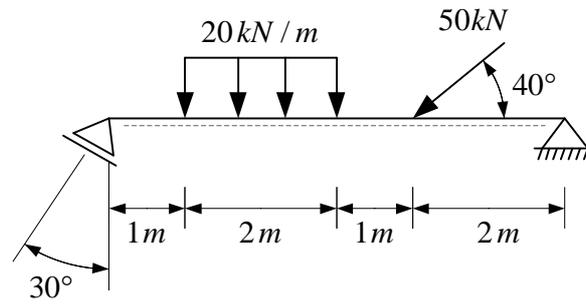
**Aufgabe 6**



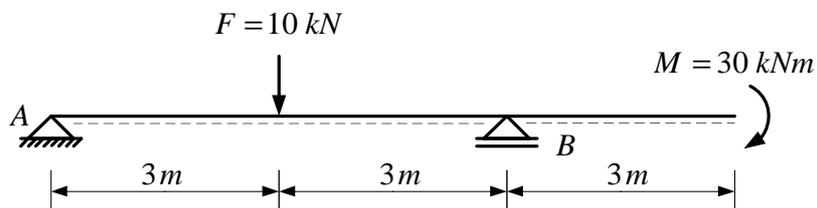
**Aufgabe 7**



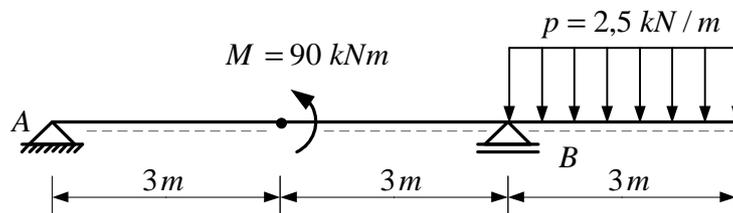
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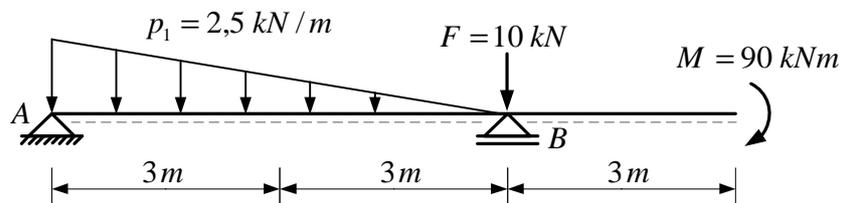
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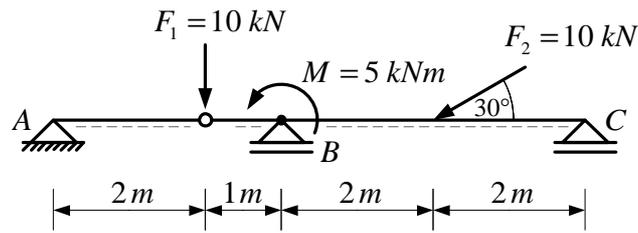
**Aufgabe 10**



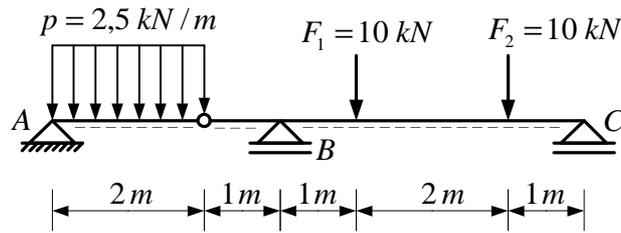
**Aufgabe 11**



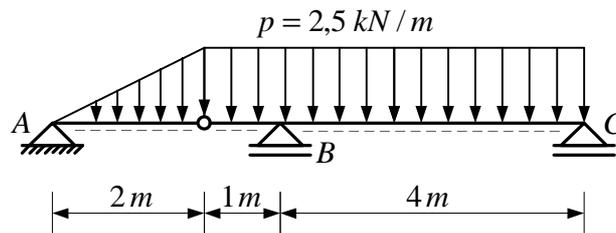
**Aufgabe 12**



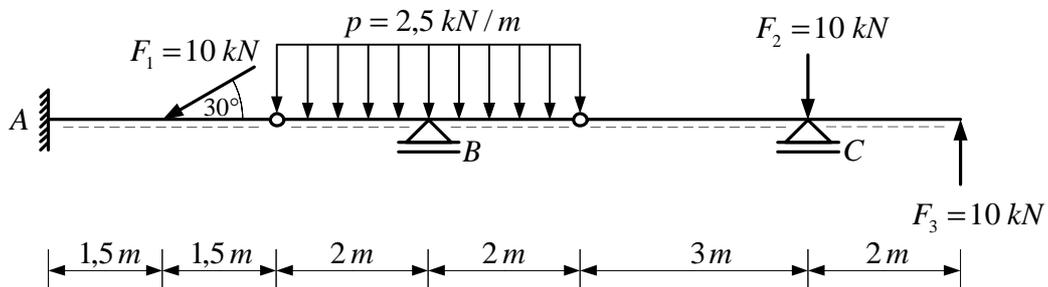
**Aufgabe 13**



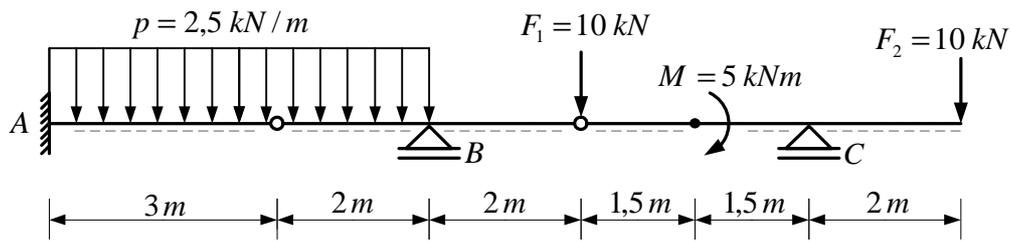
**Aufgabe 14**



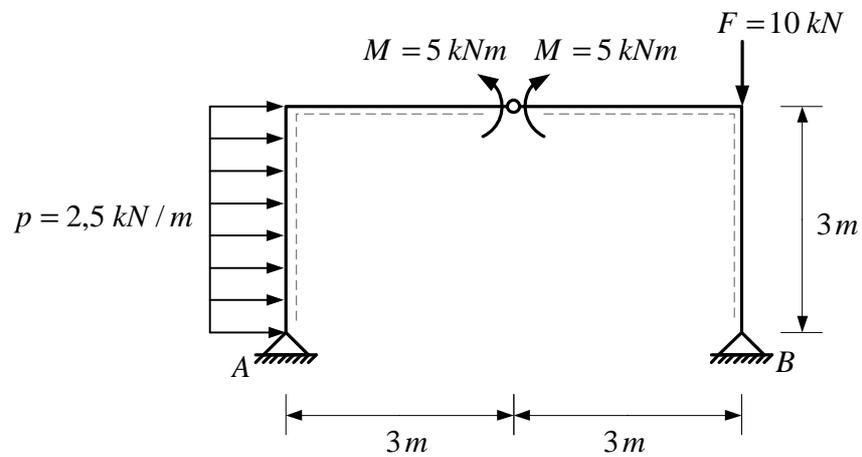
**Aufgabe 15**



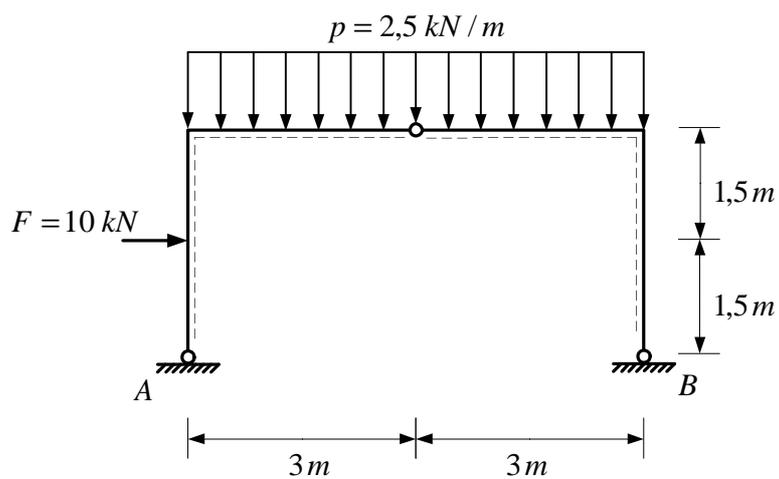
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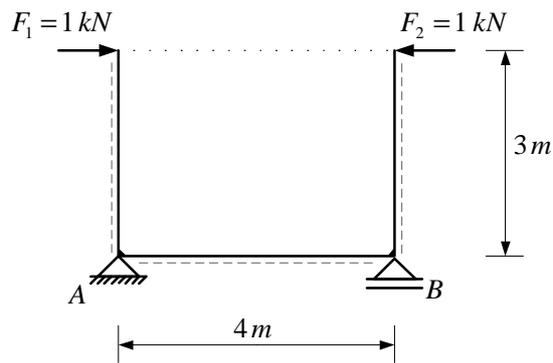
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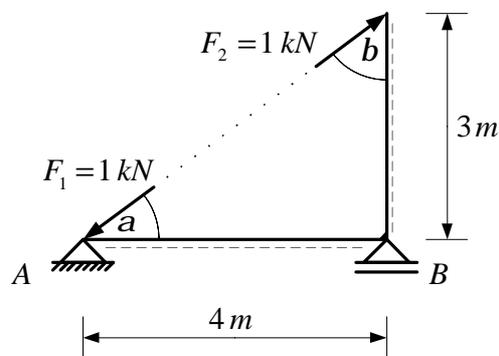
**Aufgabe 18**



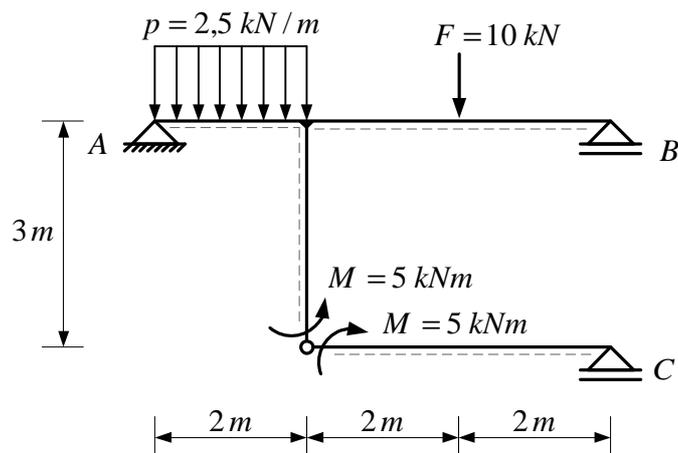
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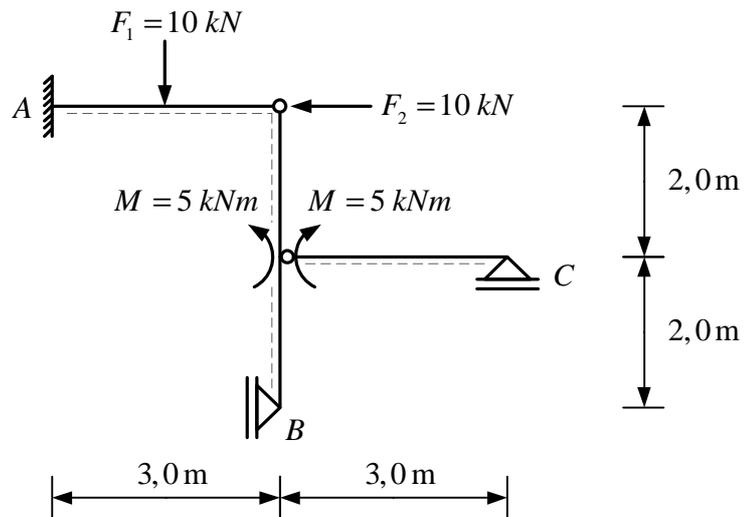
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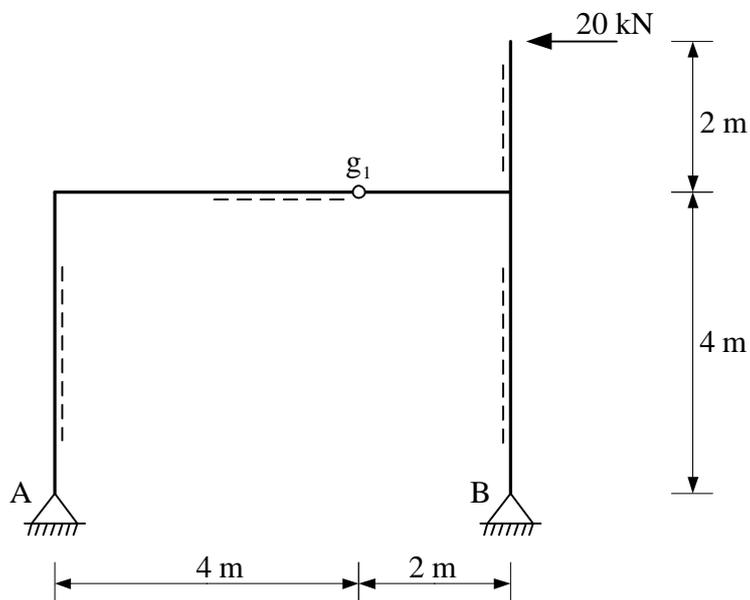
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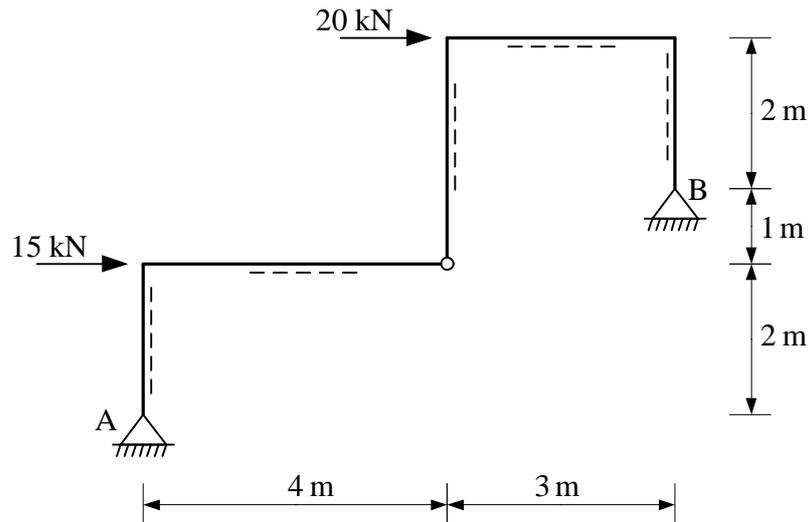
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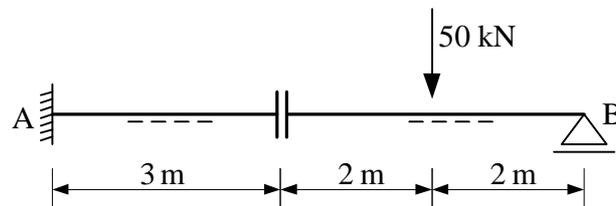
**Aufgabe 23**



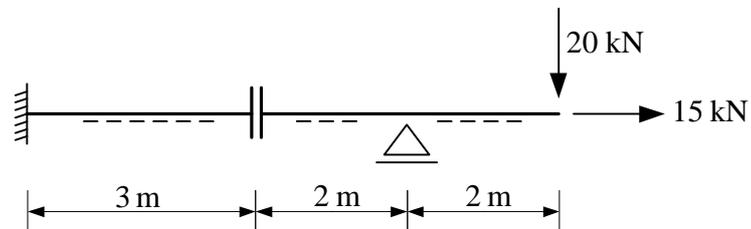
**Aufgabe 24**



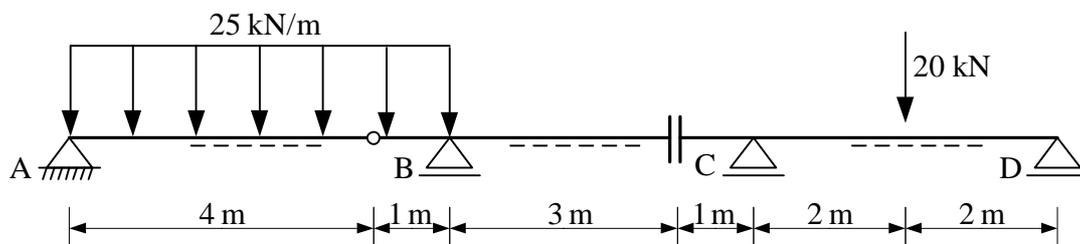
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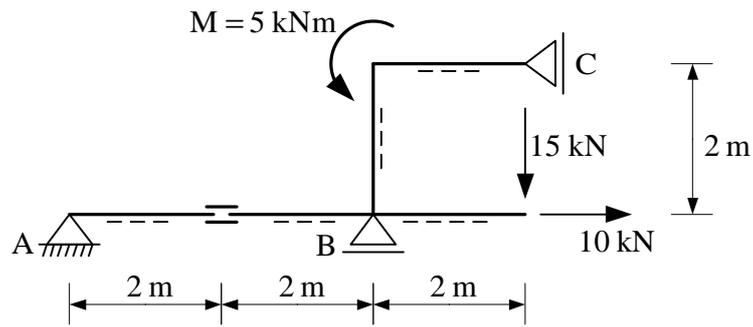
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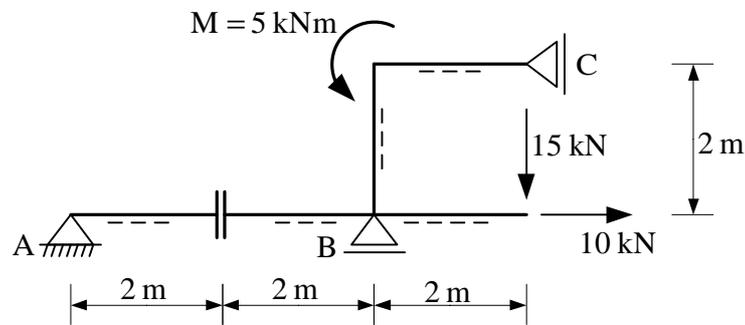
**Aufgabe 27**



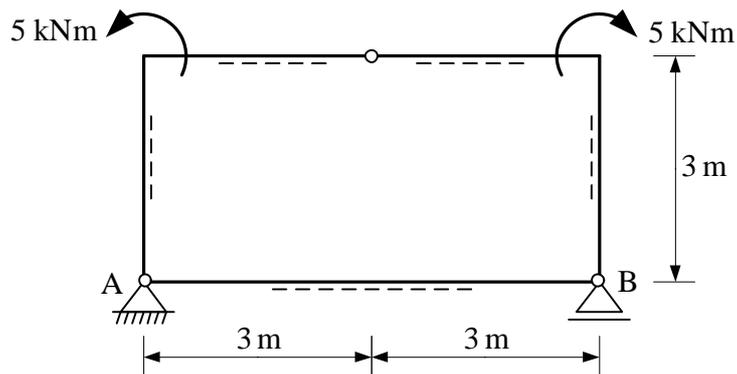
**Aufgabe 28**



**Aufgabe 29**



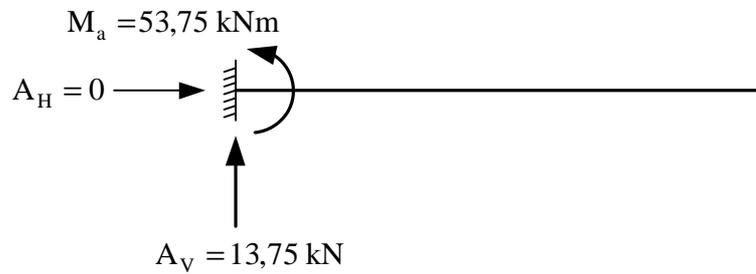
**Aufgabe 30**



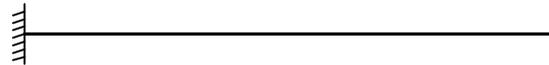
## Musterlösungen

### Aufgabe 1:

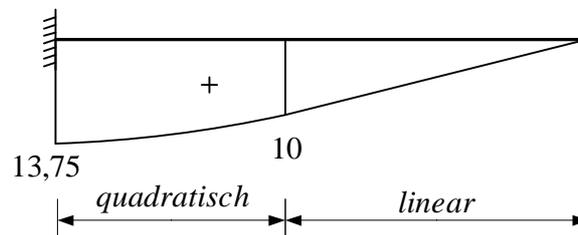
#### Auflagerreaktionen:



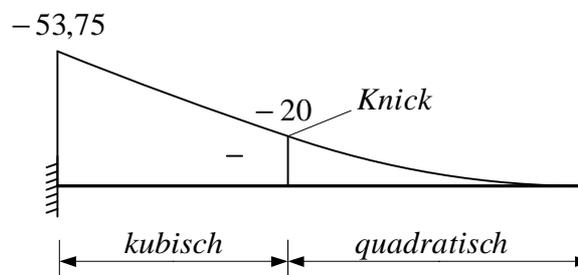
#### Normalkraft [kN]:



#### Querkraft [kN]:

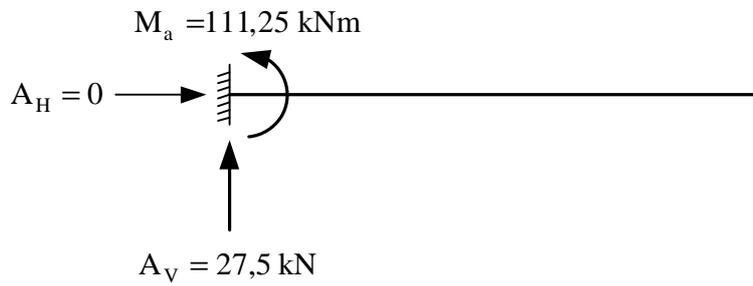


#### Biegemoment [kNm]:

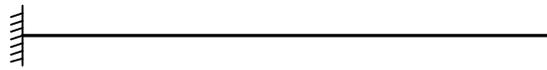


**Aufgabe 2:**

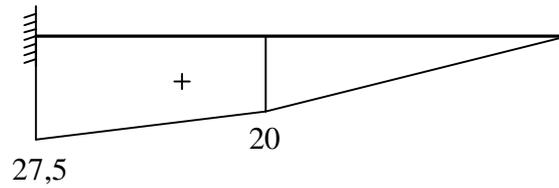
Auflagerreaktionen:



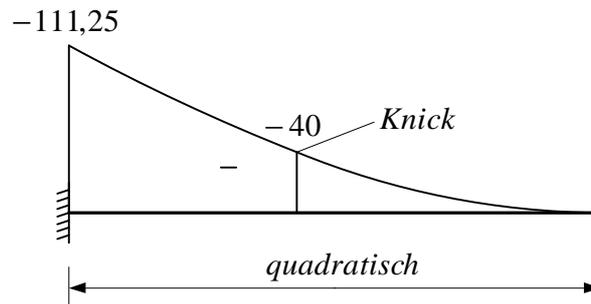
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Querkraft [kN]:

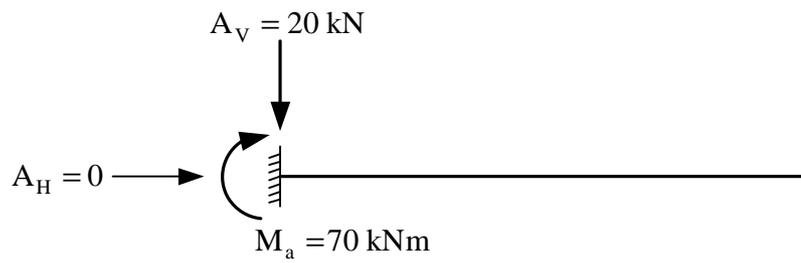


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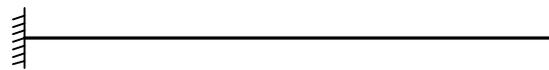


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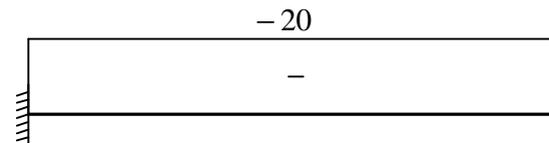
Auflagerreaktionen:



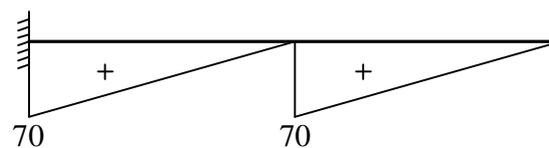
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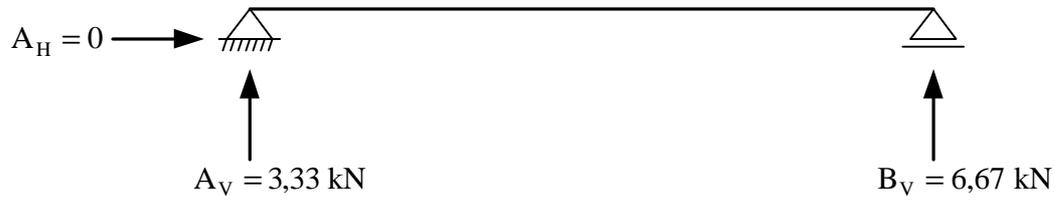


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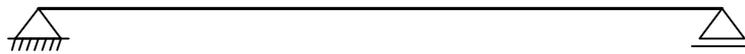


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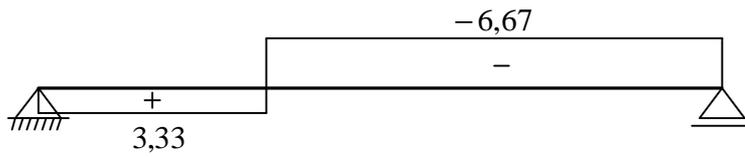
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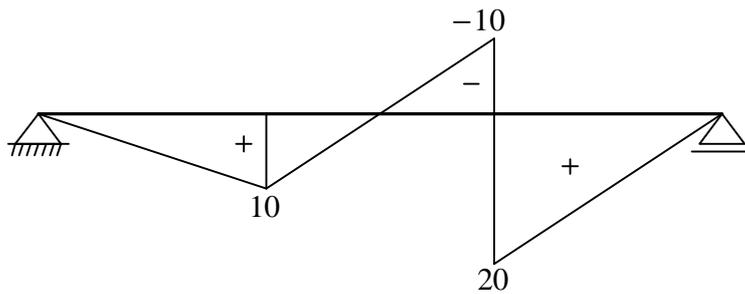
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Querkraft [kN]:

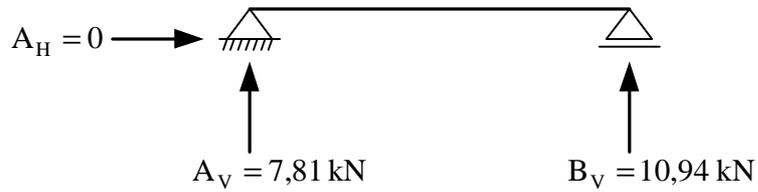


Biegemoment [kNm]:



**Aufgabe 5:**

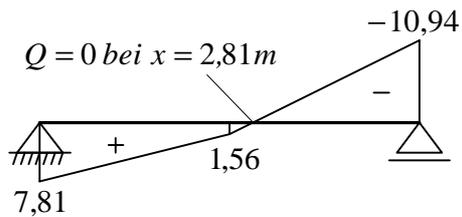
Auflagerreaktionen:



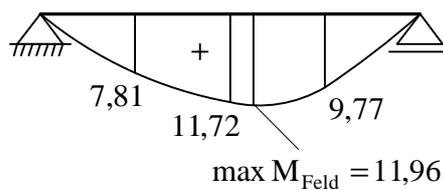
Normalkraft [kN]:



Querkraft [kN]:



Biegemoment [kNm]:



**Aufgabe 6:**

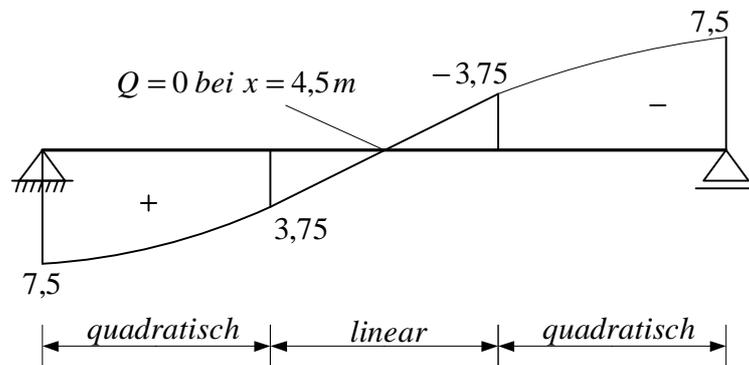
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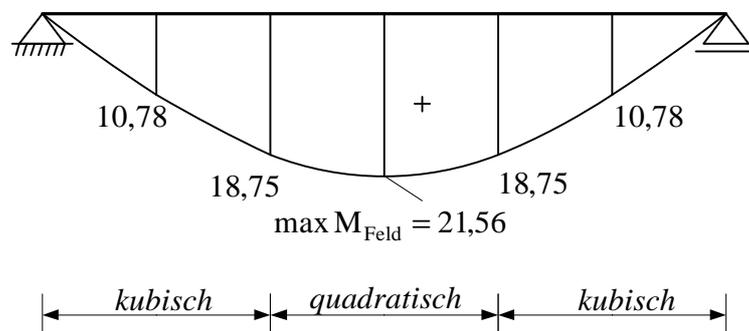
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Querkraft [kN]:

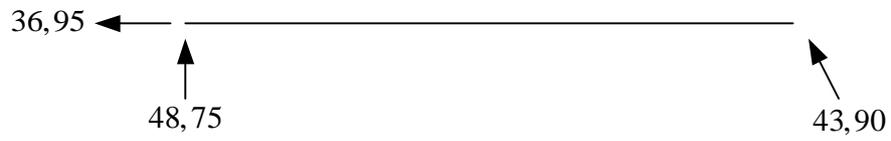


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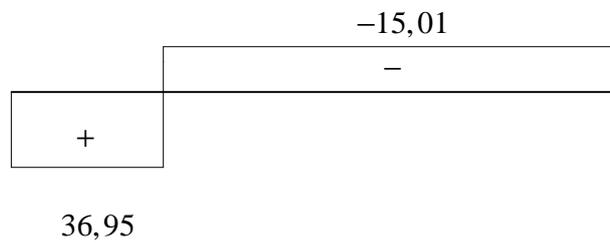


**Aufgabe 7:**

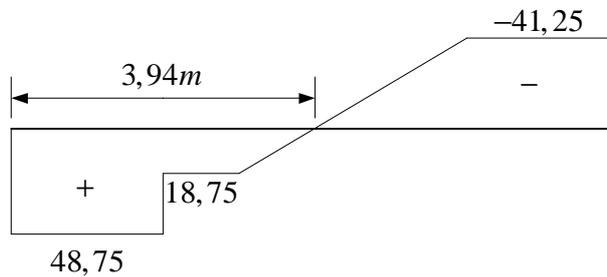
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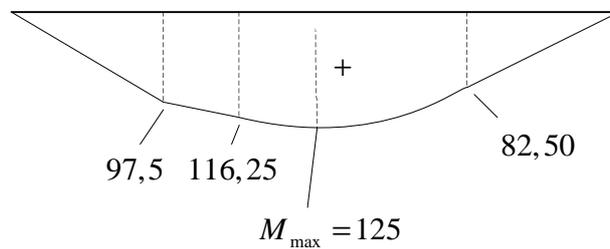
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Querkraft [kN]:

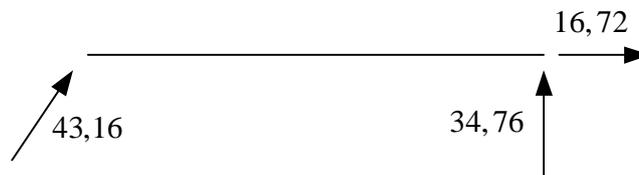


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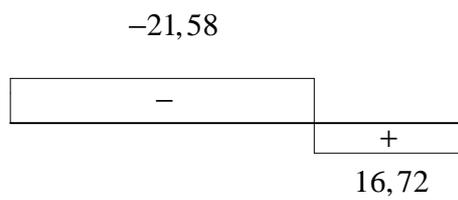


**Aufgabe 8:**

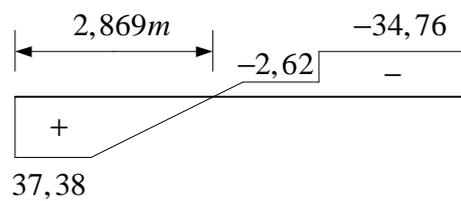
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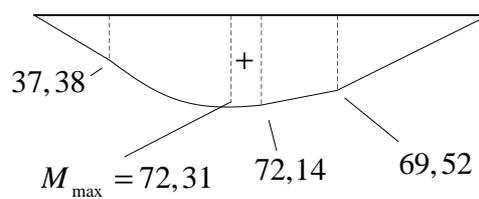
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Querkraft [kN]:



Biegemoment [kNm]:

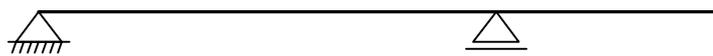


**Aufgabe 9:**

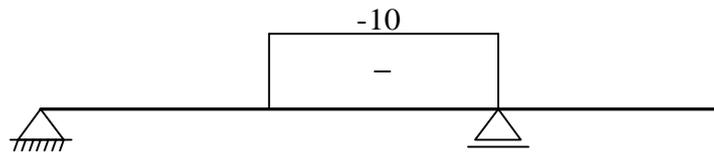
Auflagerreaktionen:



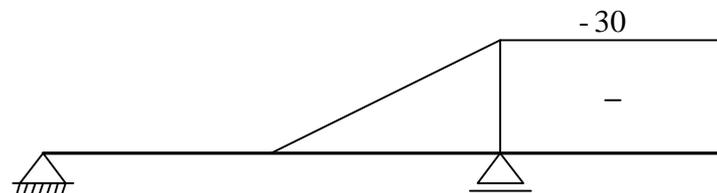
Normalkraft [kN]:



Querkraft [kN]:

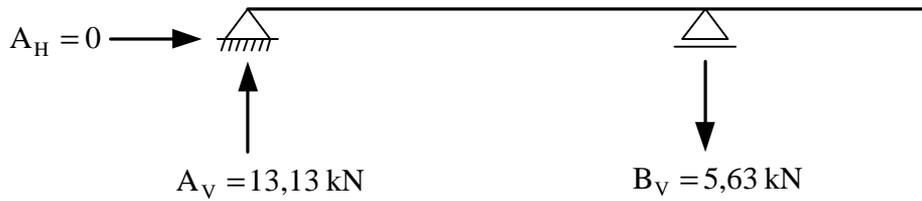


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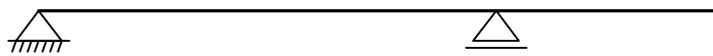


**Aufgabe 10:**

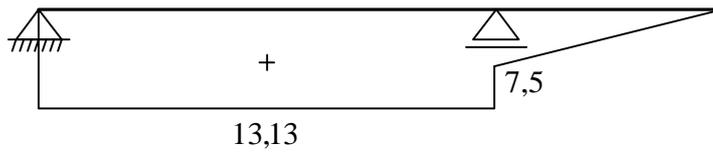
Auflagerreaktionen:



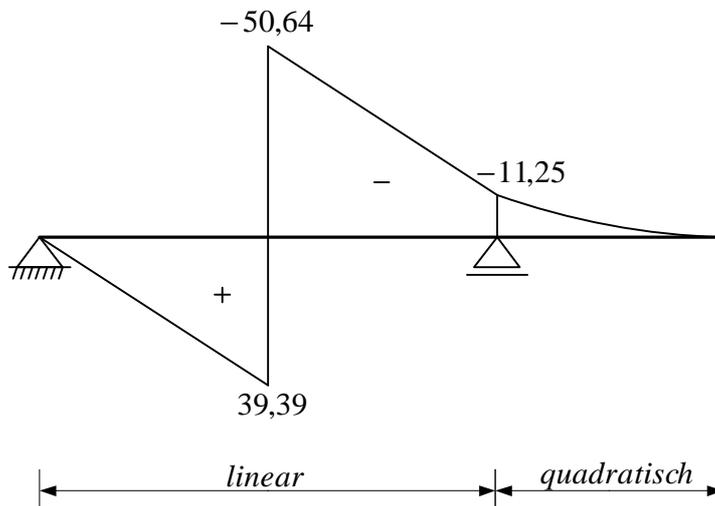
Normalkraft [kN]:



Querkraft [kN]:

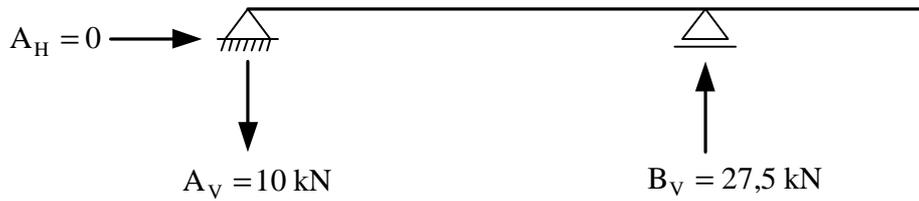


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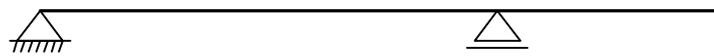


**Aufgabe 11:**

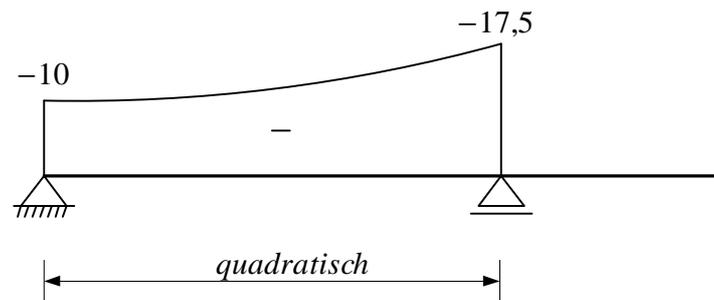
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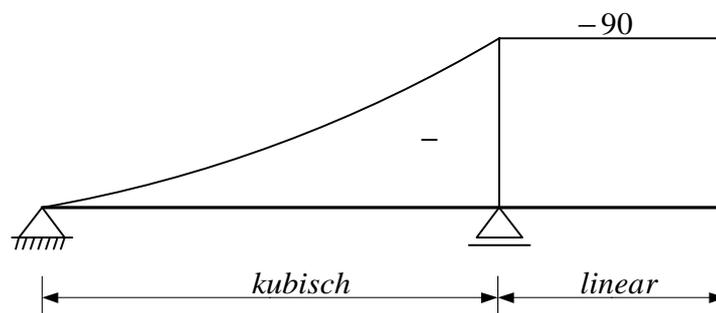
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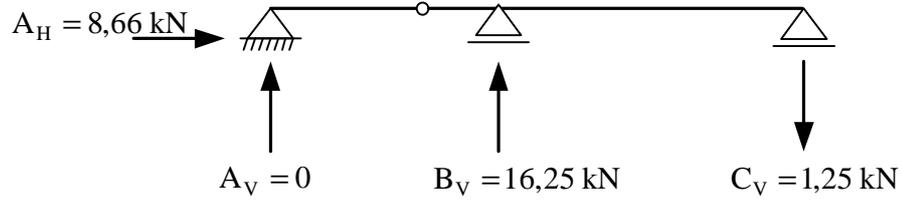


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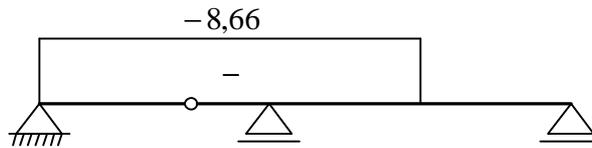


**Aufgabe 12:**

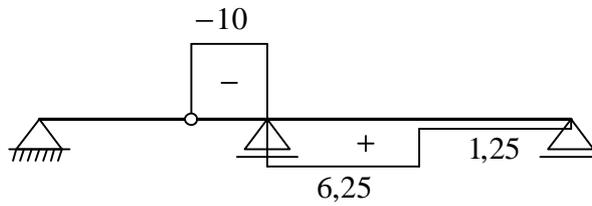
Auflagerreaktionen:



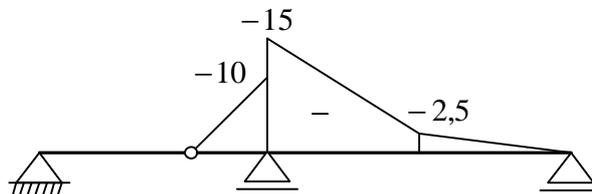
Normalkraft [kN]:



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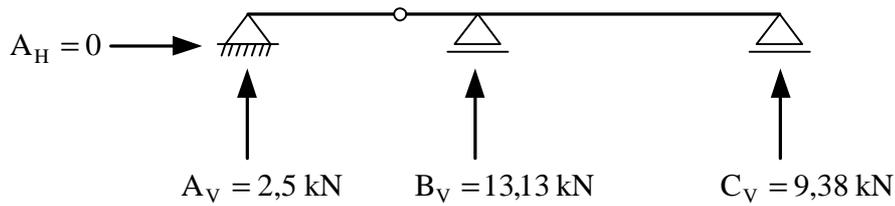


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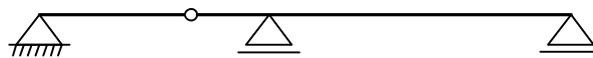


**Aufgabe 13:**

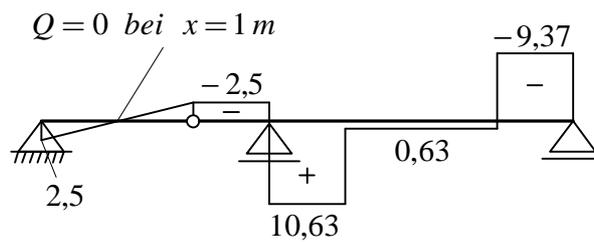
Auflagerreaktionen:



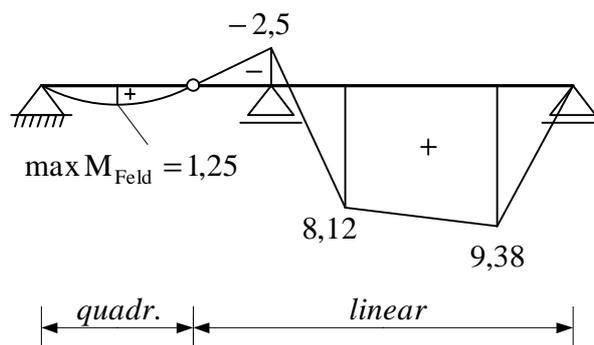
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Querkraft [kN]:

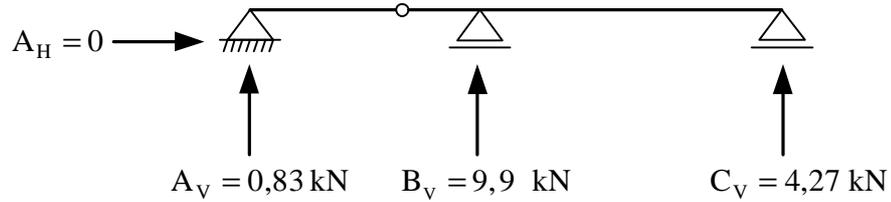


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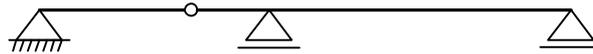


**Aufgabe 14:**

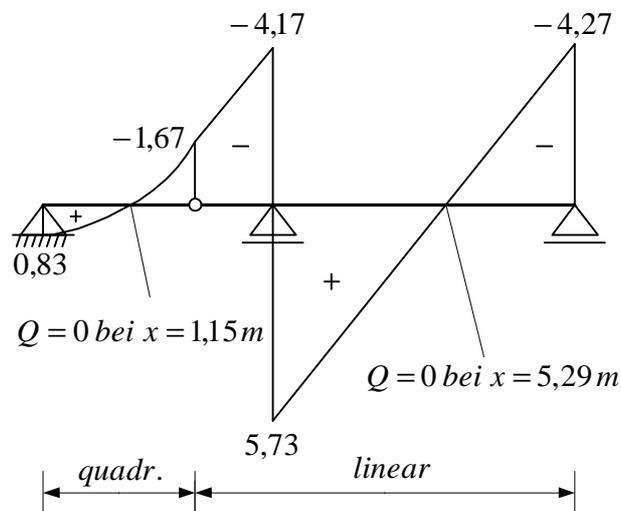
Auflagerreaktionen:



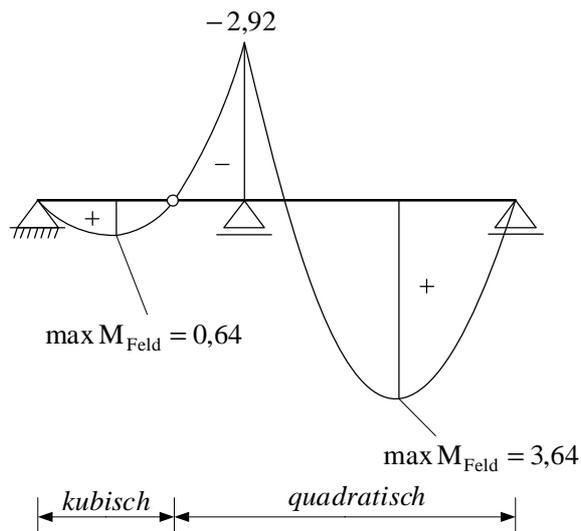
Normalkraft [kN]:



Querkraft [kN]:

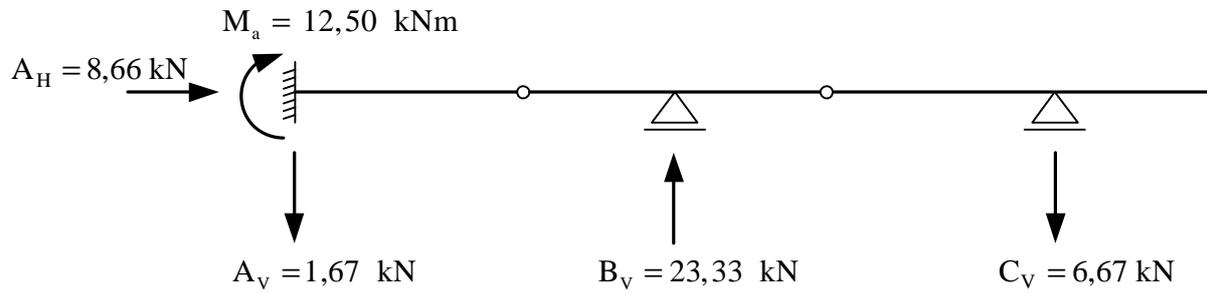


Biegemoment [kNm]:

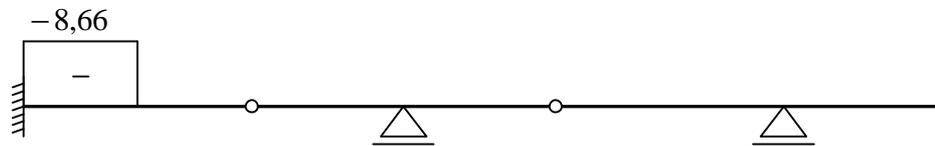


**Aufgabe 15:**

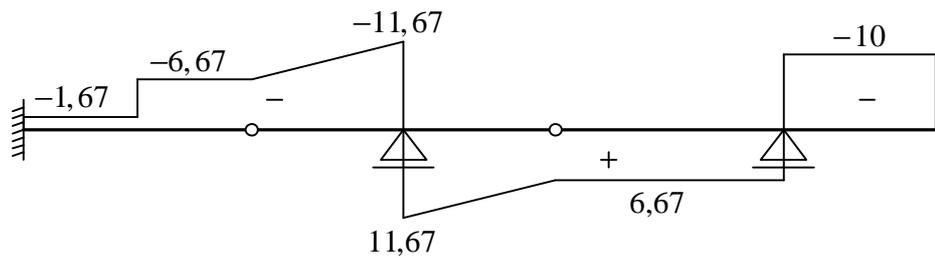
Auflagerreaktionen:



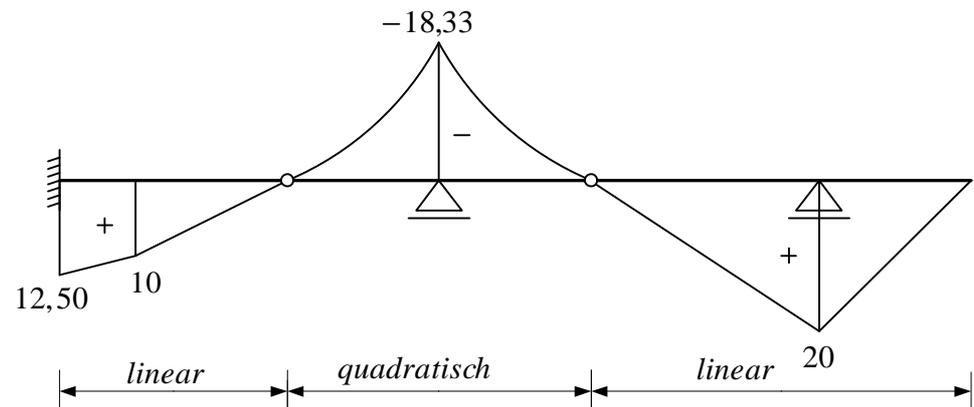
Normalkraft [kN]:



Querkraft [kN]:

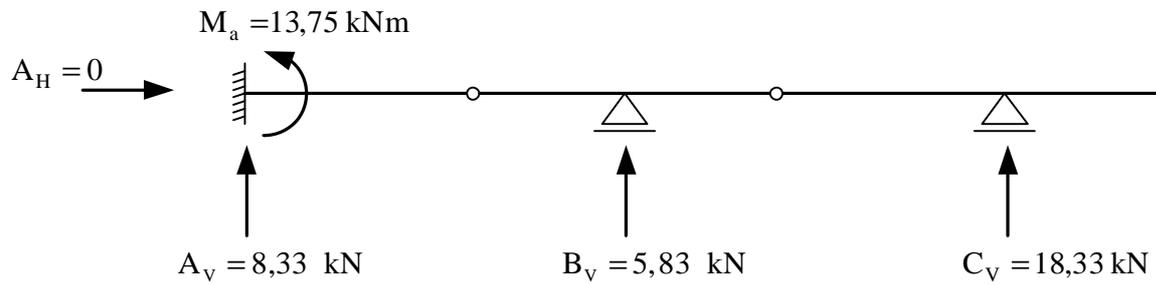


Biegemoment [kNm]:

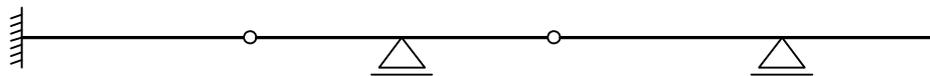


**Aufgabe 16:**

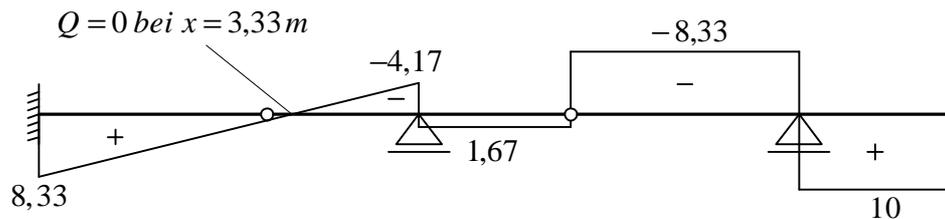
Auflagerreaktionen:



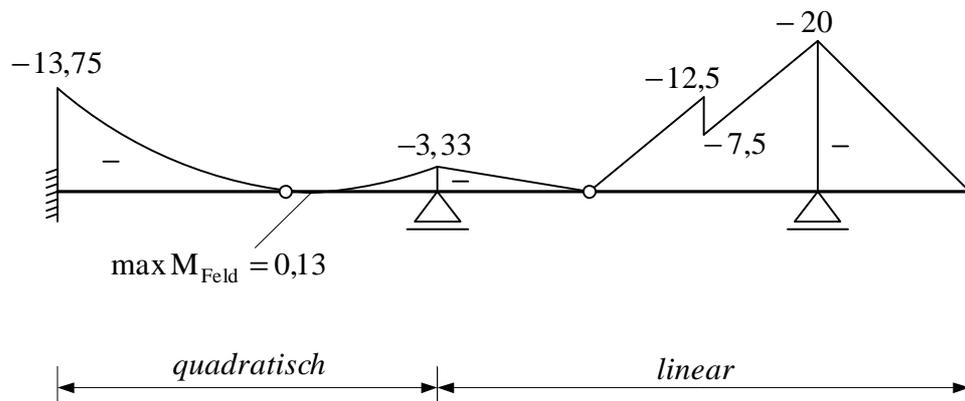
Normalkraft [kN]:



Querkraft [kN]:

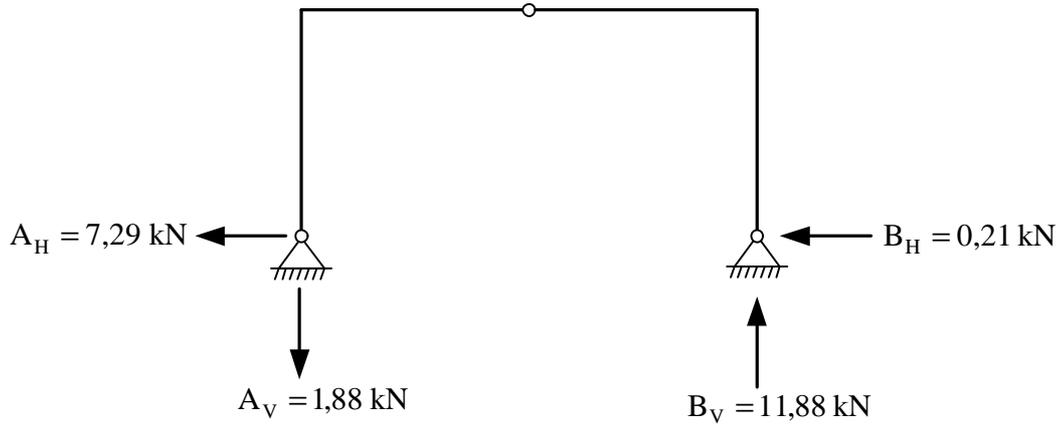


Biegemoment [kNm]:

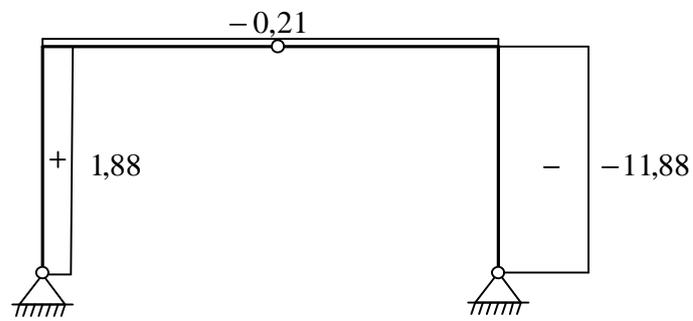


**Aufgabe 17:**

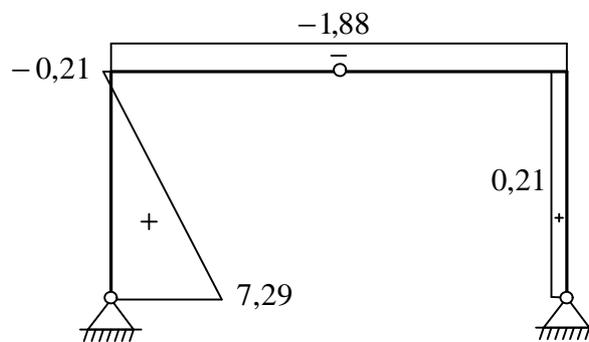
Auflagerreaktionen:



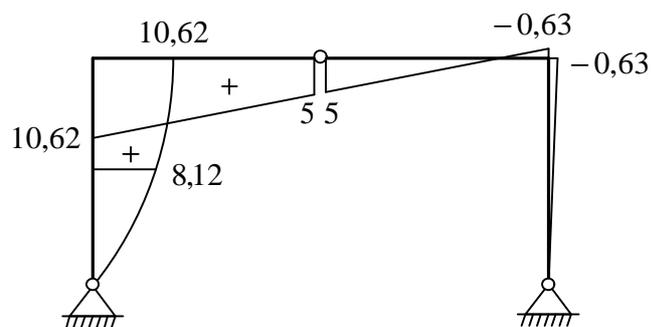
Normalkraft [kN]:



Querkraft [kN]:

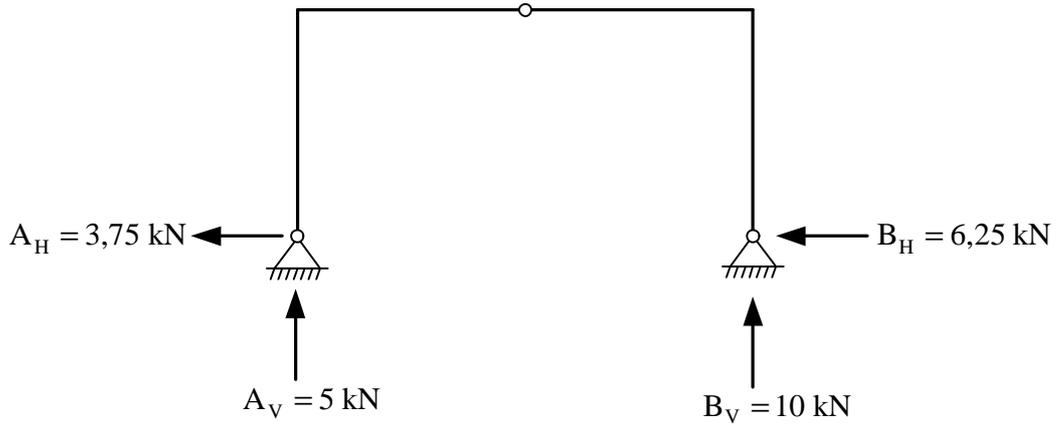


Biegemoment [kNm]:

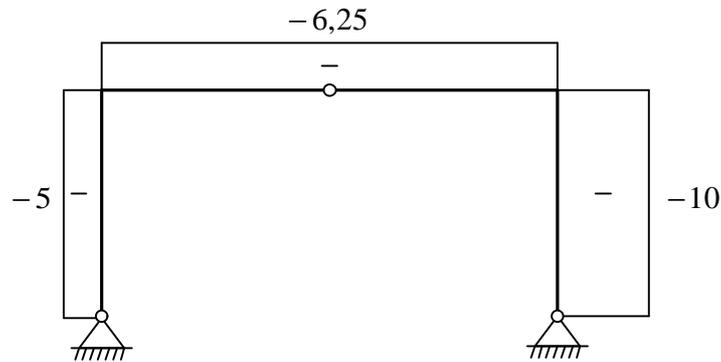


**Aufgabe 18:**

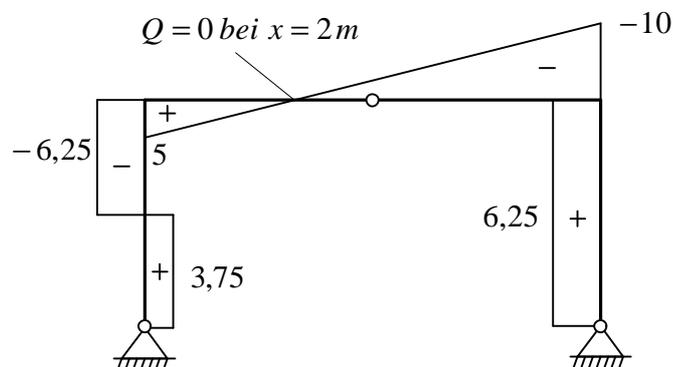
Auflagerreaktionen:



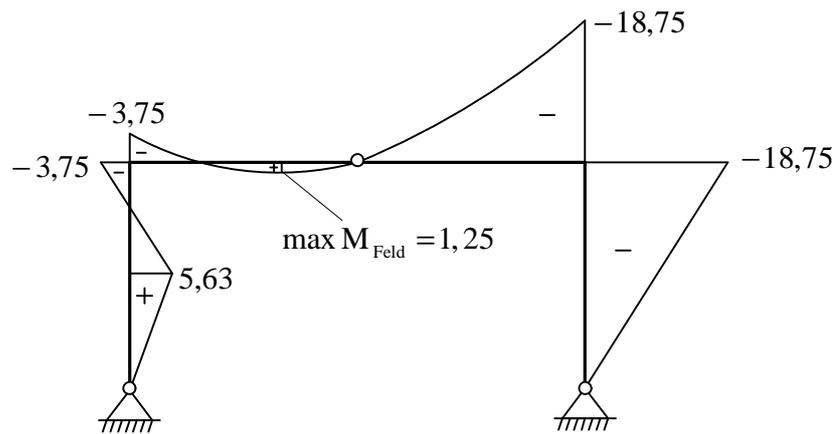
Normalkraft [kN]:



Querkraft [kN]:

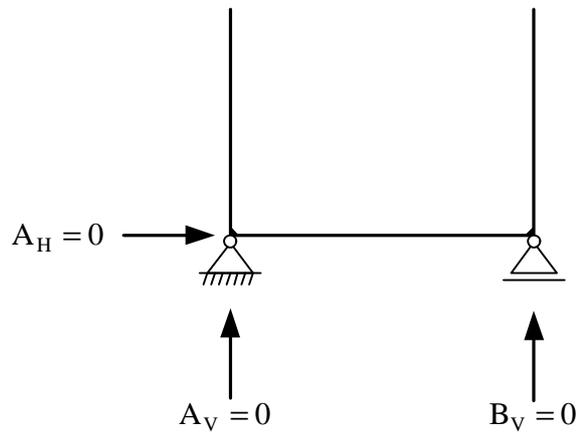


Biegemoment [kNm]:

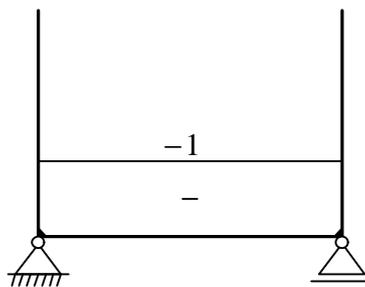


**Aufgabe 19:**

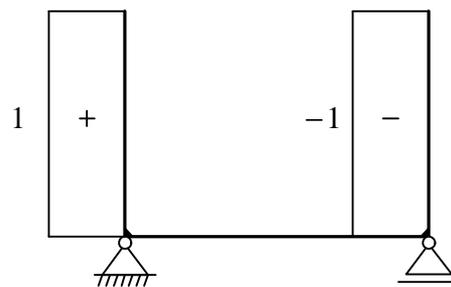
Auflagerreaktionen:



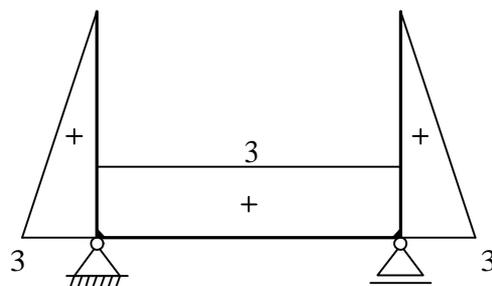
Normalkraft [kN]:



Querkraft [kN]:

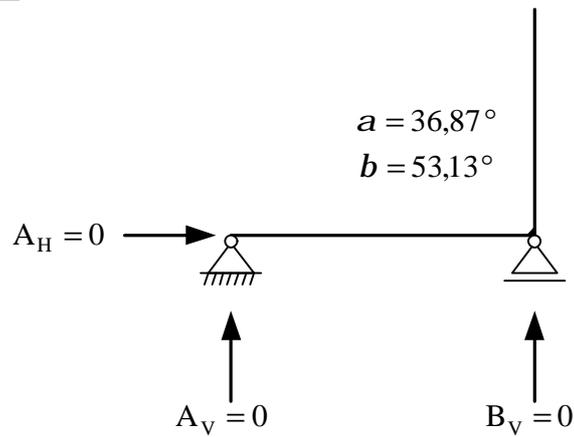


Biegemoment [kNm]:

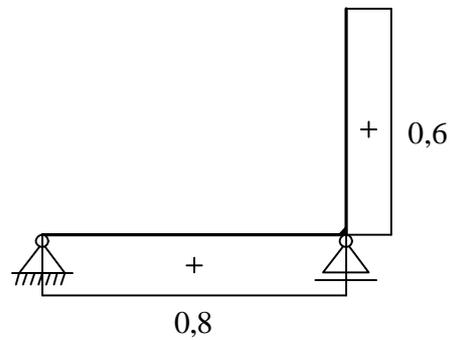


**Aufgabe 20:**

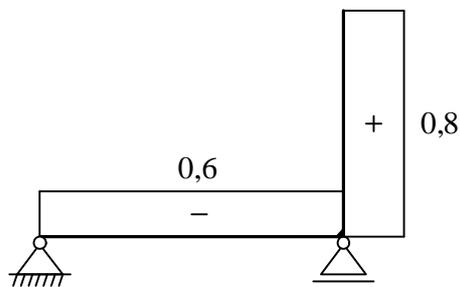
Auflagerreaktionen:



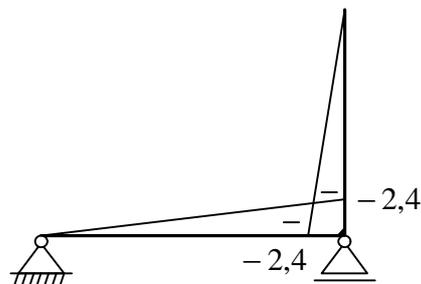
Normalkraft [kN]:



Querkraft [kN]:

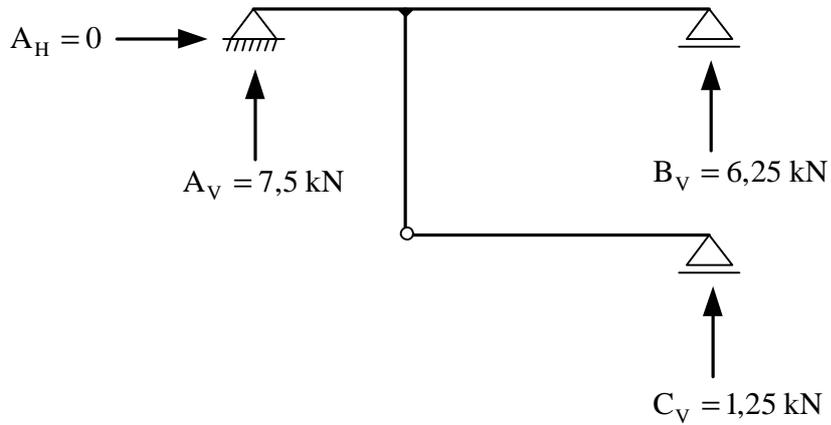


Biegemoment [kNm]:

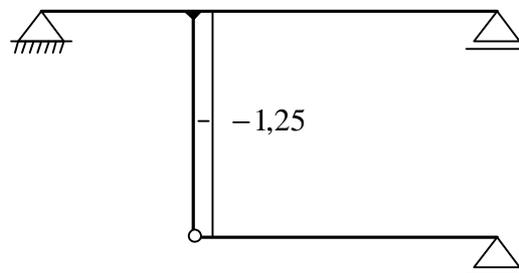


**Aufgabe 21:**

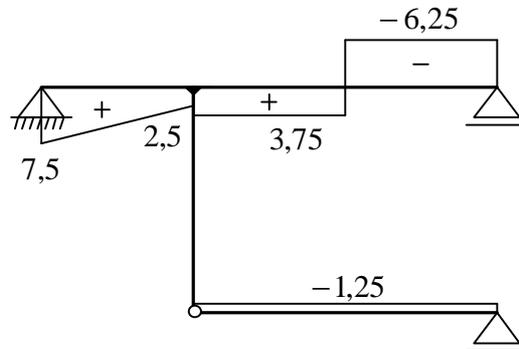
Auflagerreaktionen:



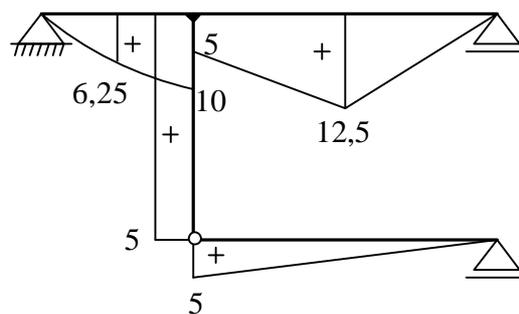
Normalkraft [kN]:



Querkraft [kN]:

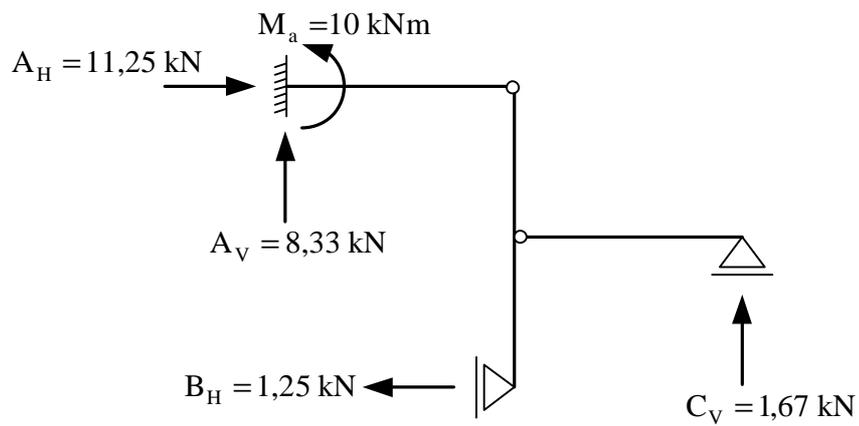


Biegemoment [kNm]:

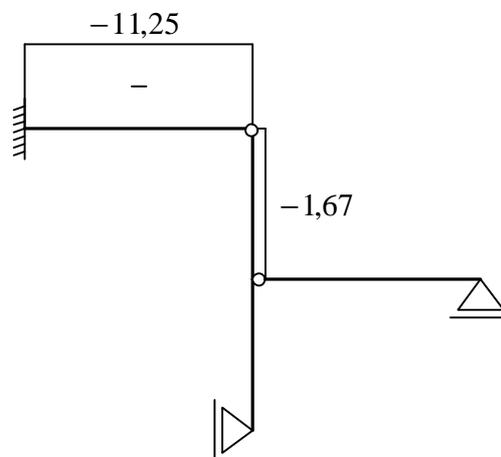


**Aufgabe 22:**

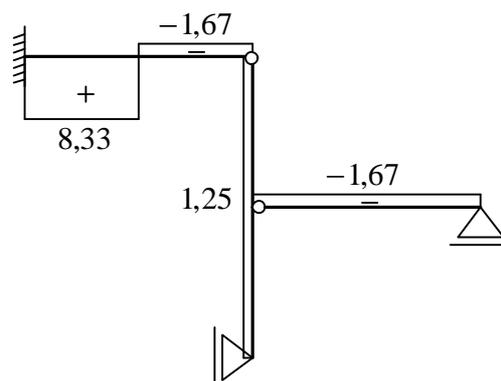
Auflagerreaktionen:



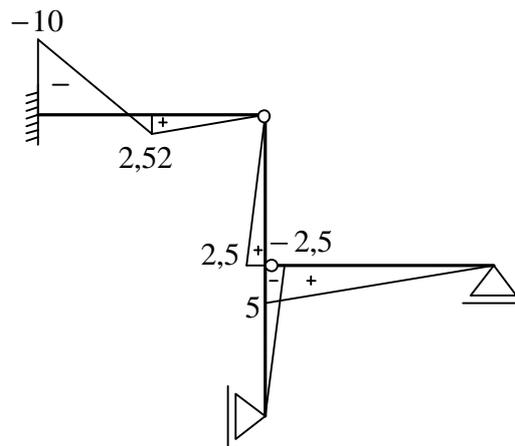
Normalkraft [kN]:



Querkraft [kN]:

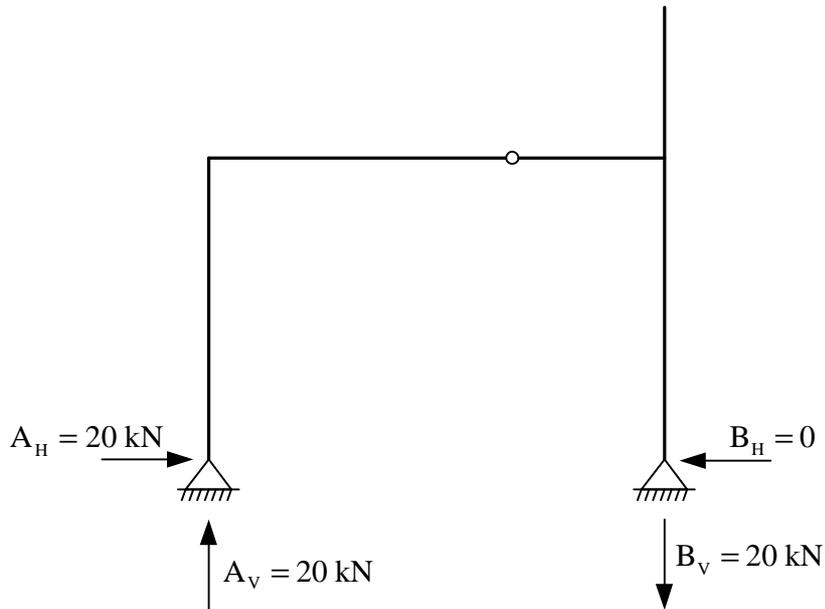


Biegemoment [kNm]:

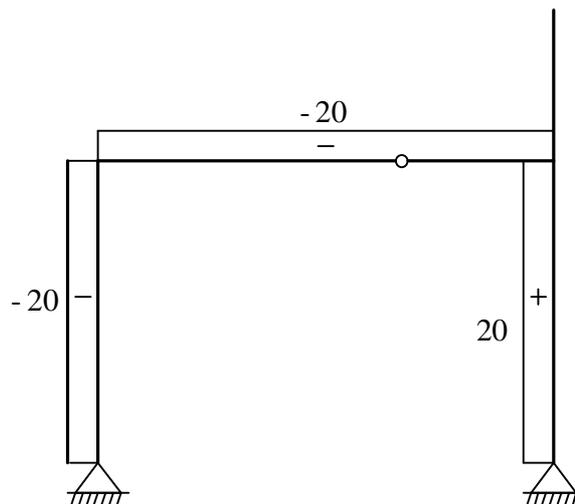


**Aufgabe 23:**

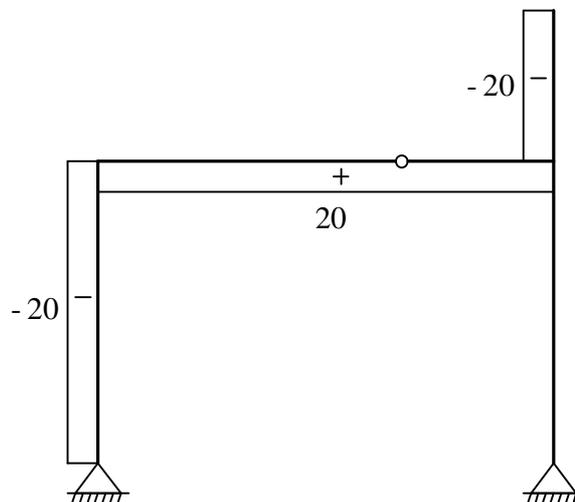
Auflagerreaktionen:



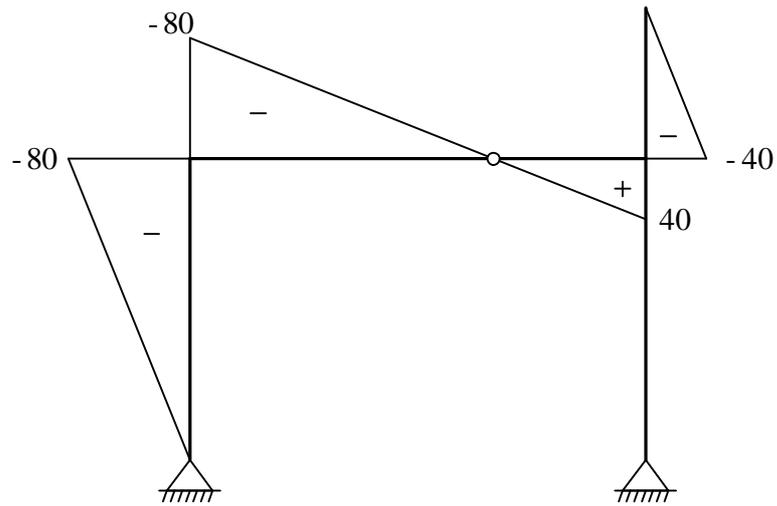
Normalkraft [kN]:



Querkraft [kN]:

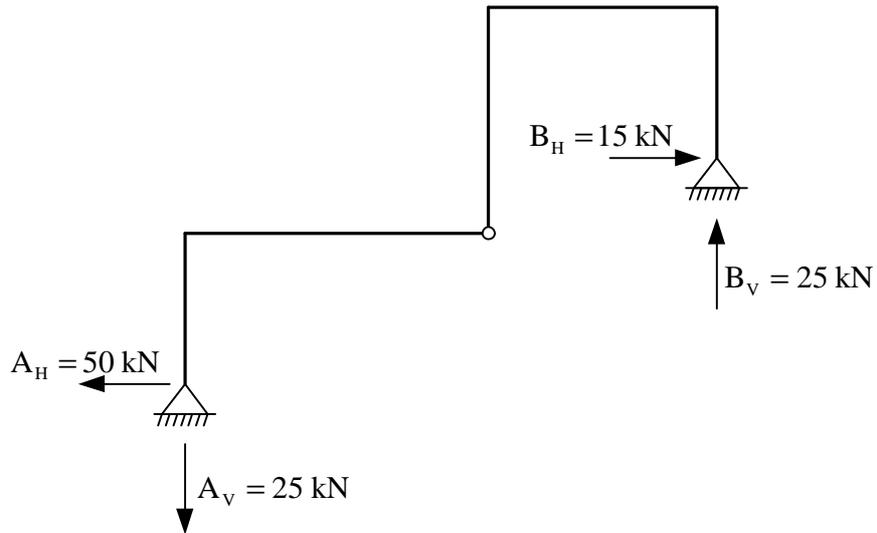


Biegemoment [kNm]:

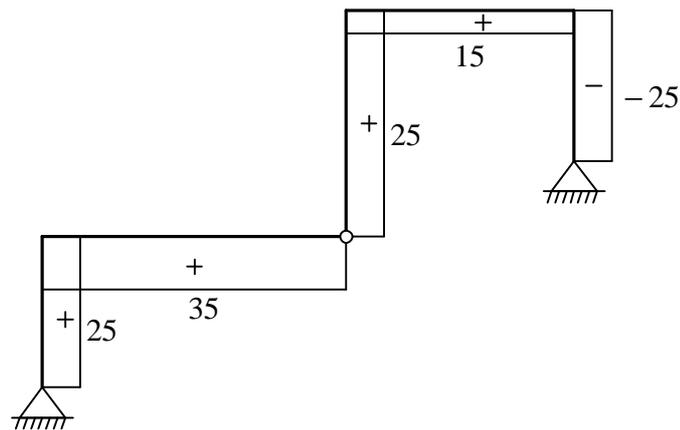


**Aufgabe 24:**

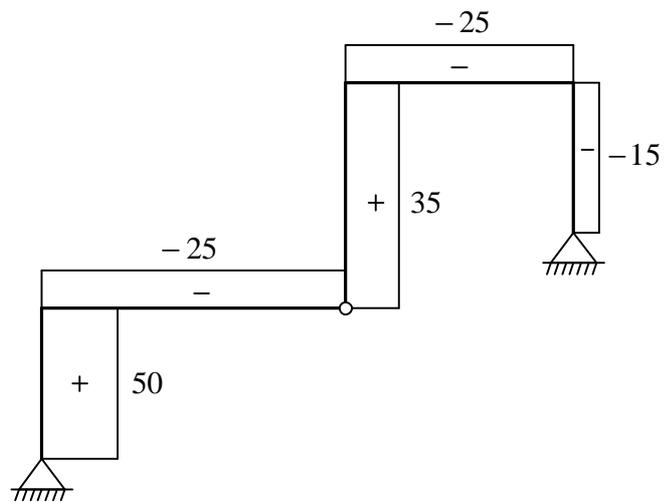
Auflagerreaktionen:



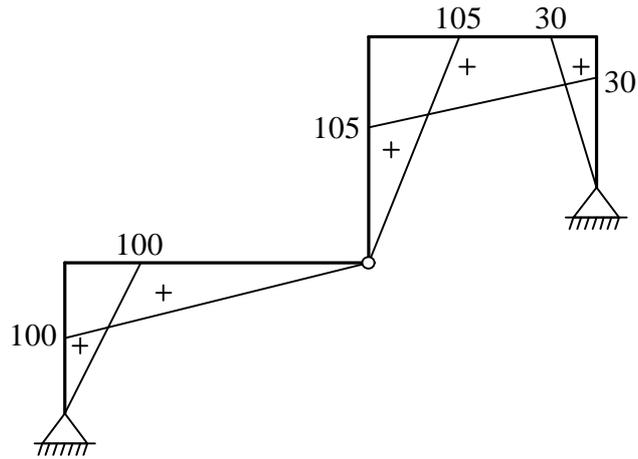
Normalkraft [kN]:



Querkraft [kN]:

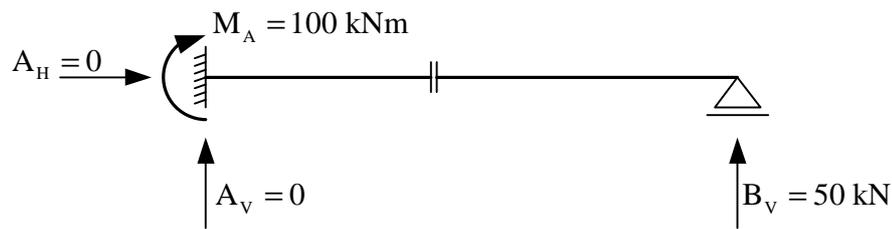


Biegemoment [kNm]:

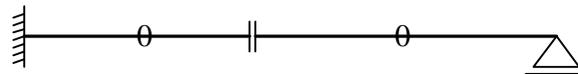


**Aufgabe 25:**

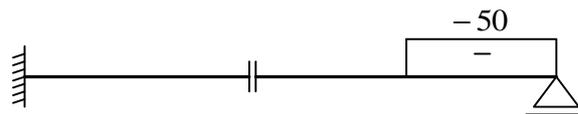
Auflagerreaktionen:



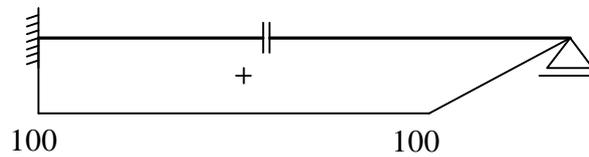
Normalkraft [kN]:



Querkraft [kN]:

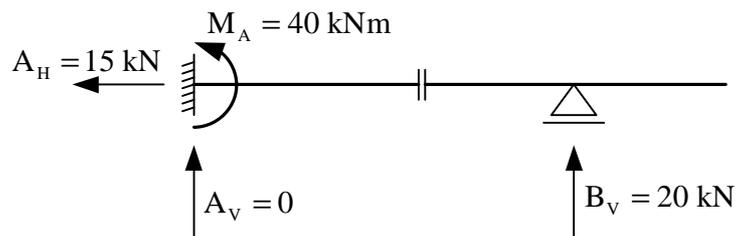


Biegemoment [kNm]:

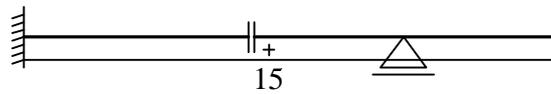


**Aufgabe 26:**

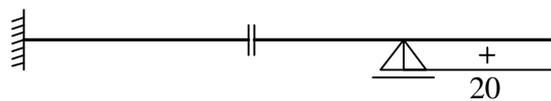
Auflagerreaktionen:



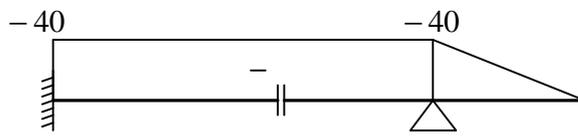
Normalkraft [kN]:



Querkraft [kN ]:

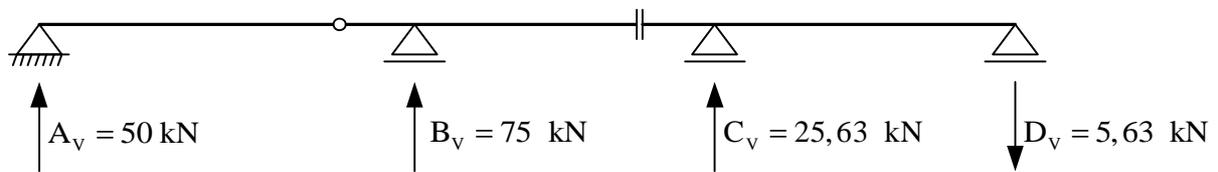


Biegemoment [kNm]:

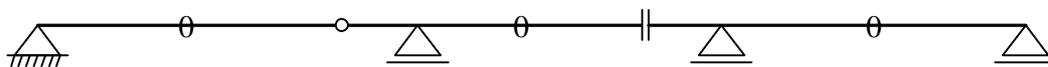


**Aufgabe 27:**

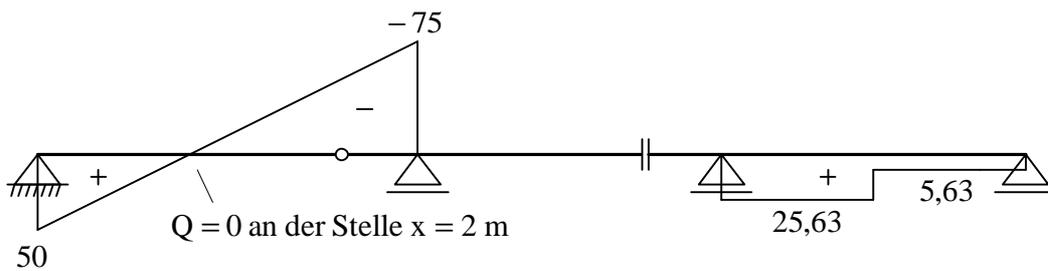
Auflagerreaktionen:



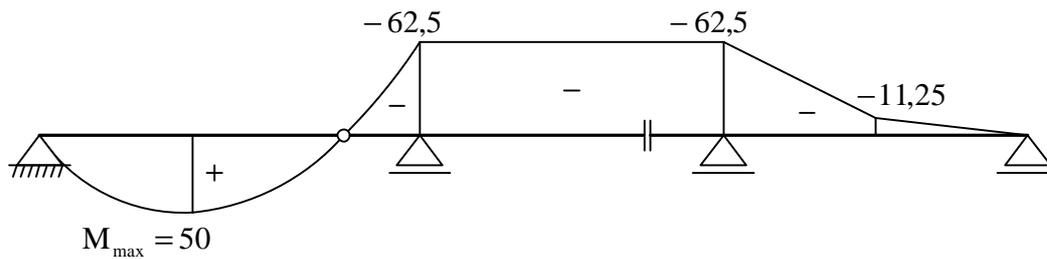
Normalkraft [kN]:



Querkraft [kN ]:

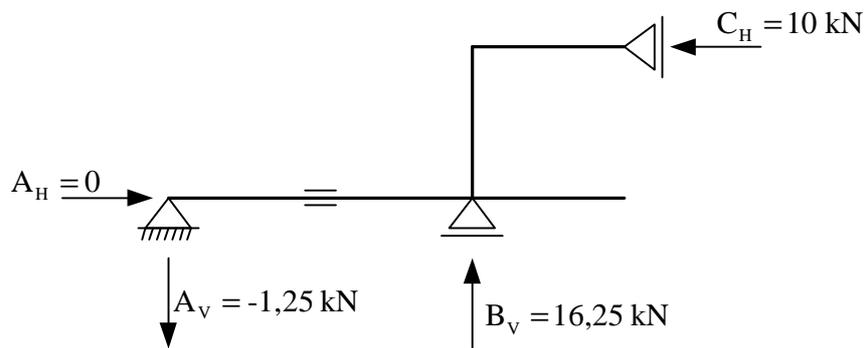


Biegemoment [kNm]:

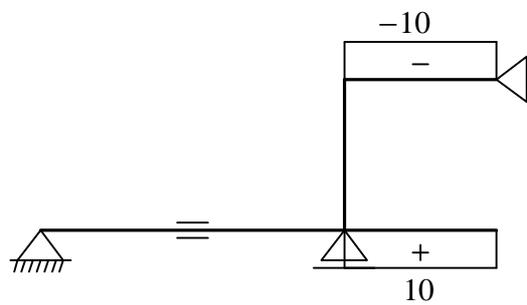


**Aufgabe 28:**

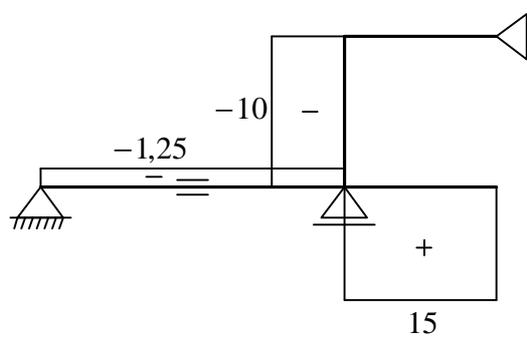
Auflagerreaktionen:



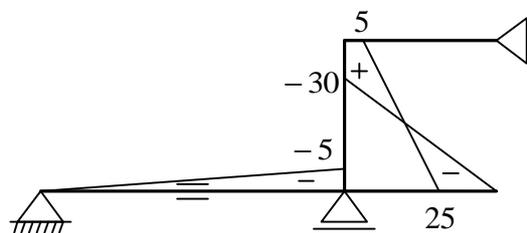
Normalkraft [kN]:



Querkraft [kN]:

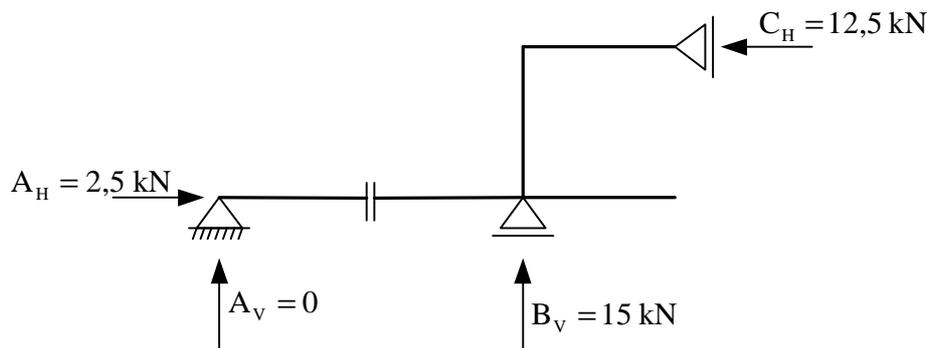


Biegemoment [kNm]:

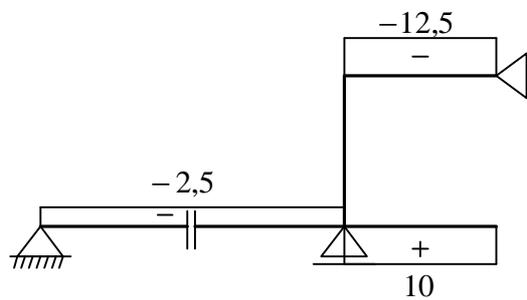


**Aufgabe 29:**

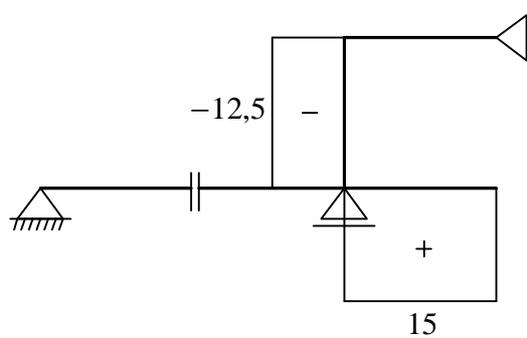
Auflagerreaktionen:



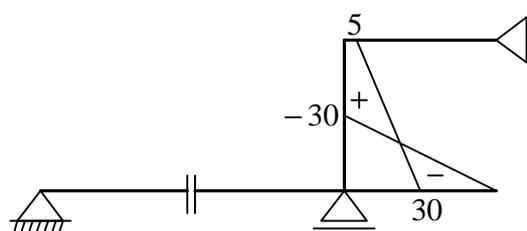
Normalkraft [kN]:



Querkraft [kN]:

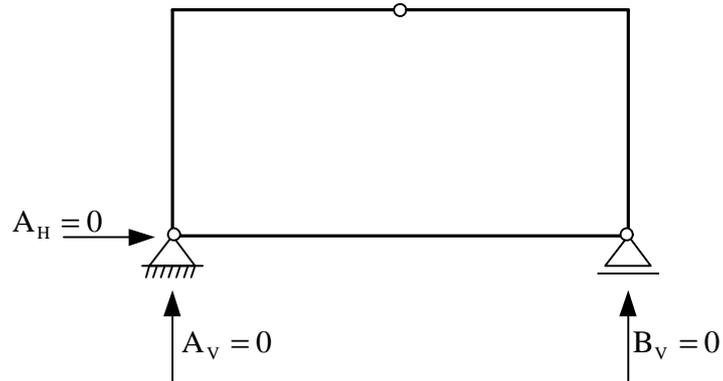


Biegemoment [kNm]:

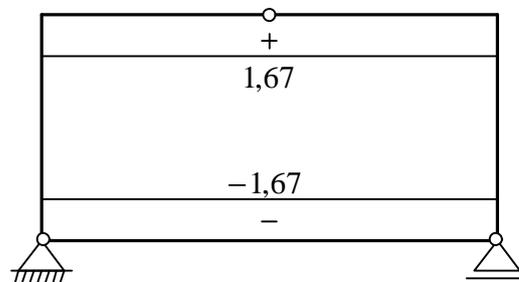


**Aufgabe 30:**

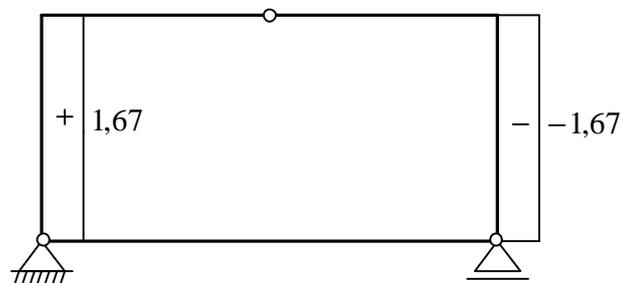
Auflagerreaktionen:



Normalkraft [kN]:



Querkraft [kN]:



Biegemoment [kNm]:

