

# ТЕХНИЧКА МЕХАНИКА 1

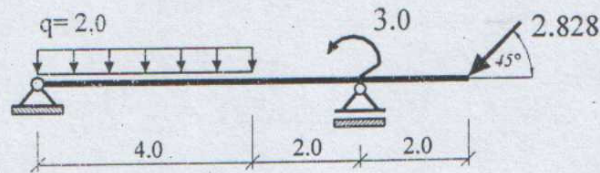
## 3. КОЛОКВИЈУМ

ШКОЛ. ГОД. 2007/08

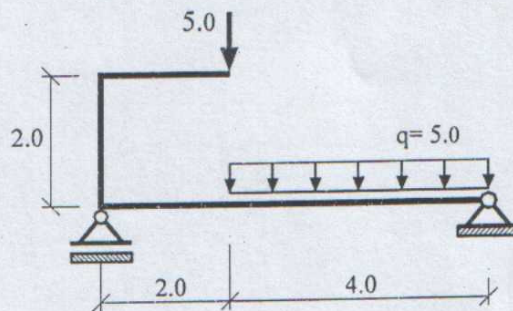
### ЗАДАЦИ ЗА ВЕЖБУ

Нацртати дијаграме пресечних сила за приказане носаче:

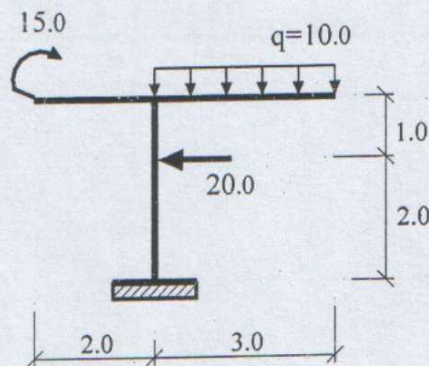
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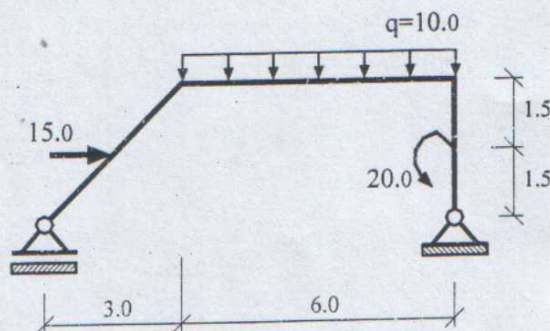
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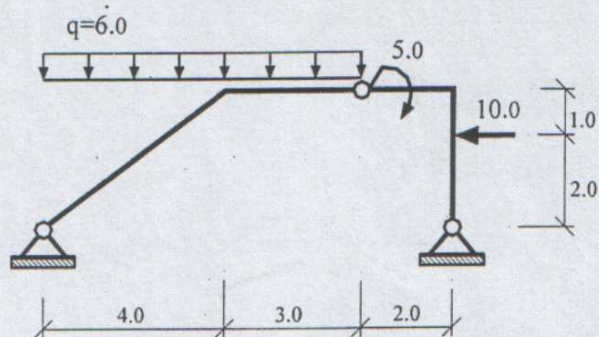


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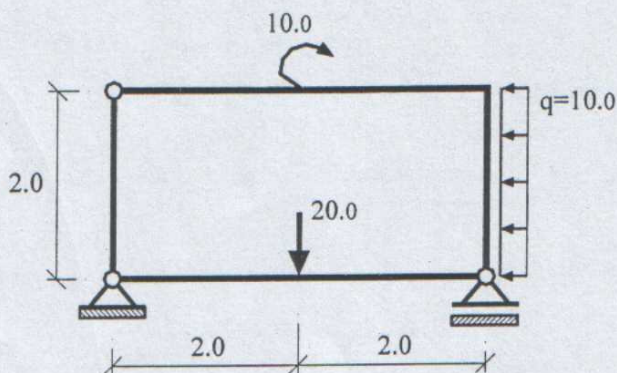




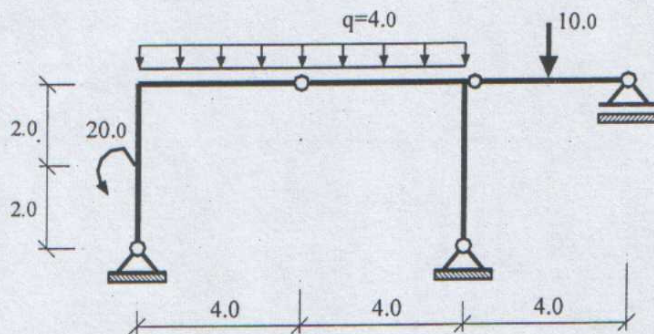
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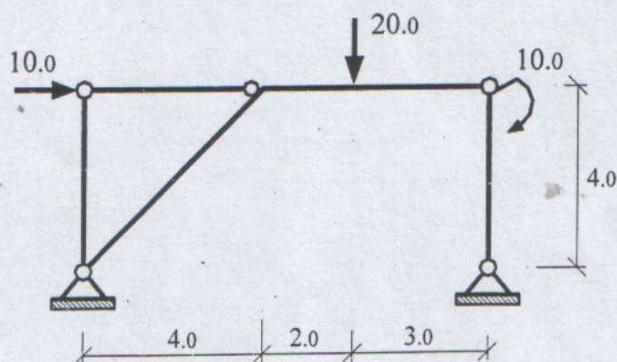
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12



13

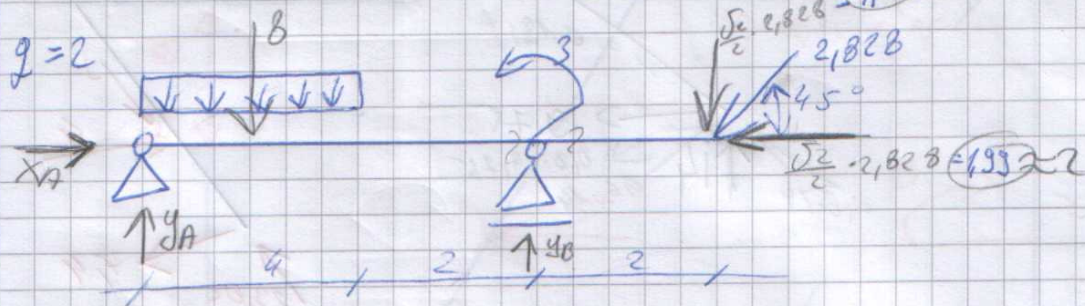




6

3D нонувийн

1



$$\sum X=0: X_A - 2 = 0 \Rightarrow X_A = 2$$

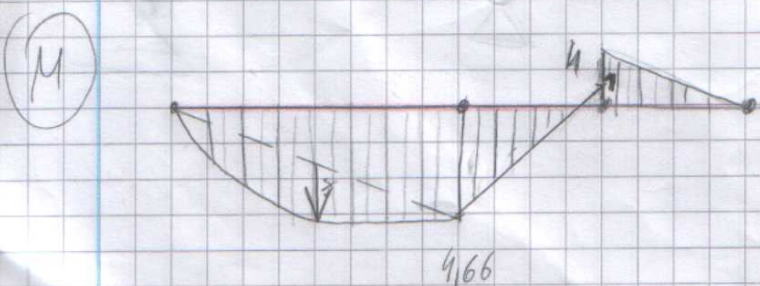
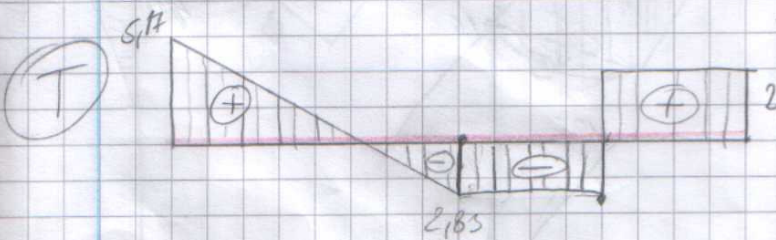
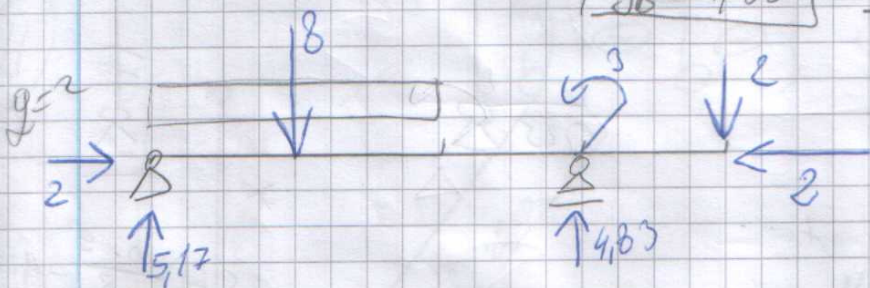
$$\sum Y=0: Y_A - 8 + Y_B - 2 = 0$$

$$\sum M_A=0: 8 \cdot 2 - 3 + 2 \cdot 8 - Y_B \cdot 6 = 0$$

$$23 = 6Y_B$$

$$Y_B = 3.83$$

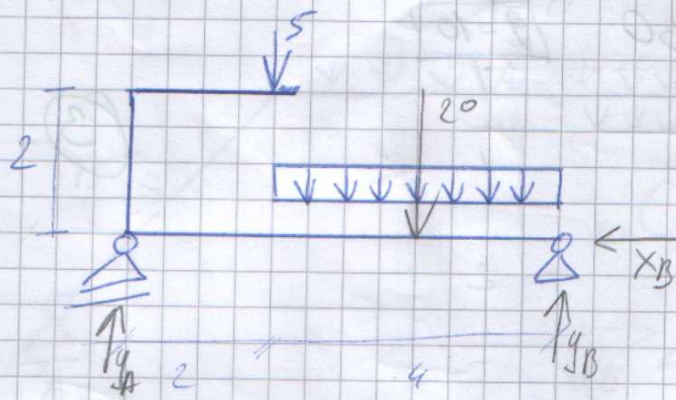
$$Y_A = 5.17$$



$$\delta = \frac{2 \cdot 16}{8} = 4$$



⑦



$2=5$

②

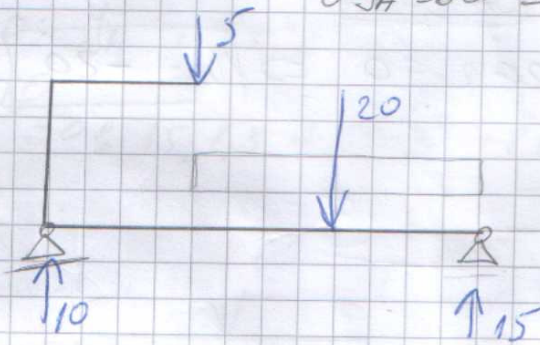
$$\sum X=0: X_B=0$$

$$\sum y=0: y_A - 5 - 20 + y_B = 0$$

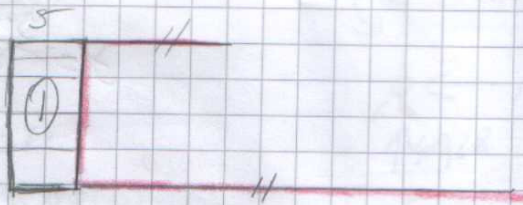
$$y_B = 15$$

$$\sum M_B=0: -20 \cdot 2 - 5 \cdot 4 + y_A \cdot 6 = 0$$

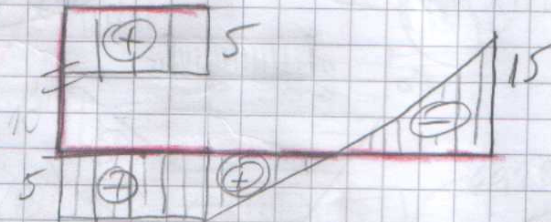
$$6y_A = 60 \Rightarrow y_A = 10$$



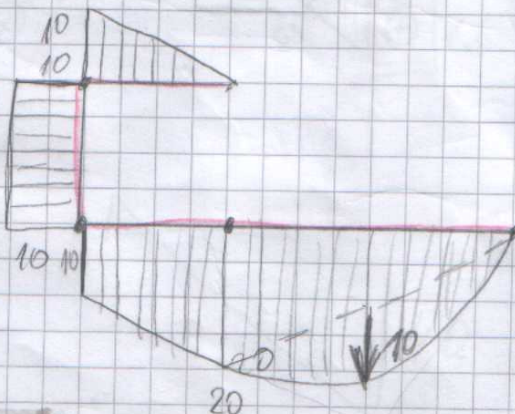
⑪



⑦



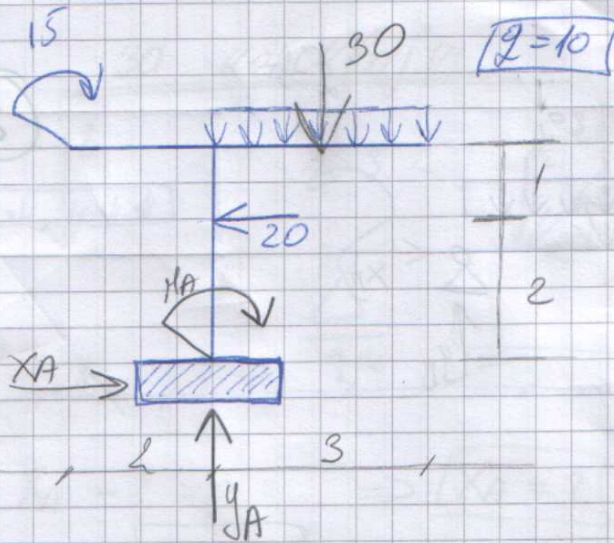
④



$$S = \frac{5 \cdot 16}{3} = 10$$



8

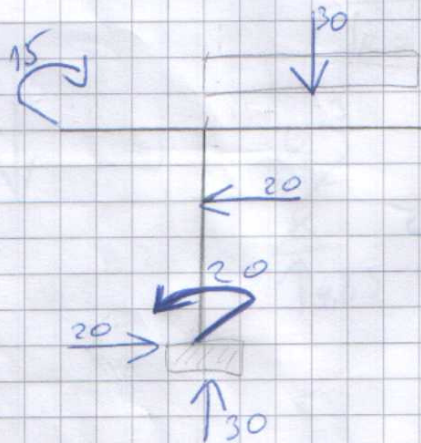


3

$$\sum X = 0: X_A - 20 = 0 \Rightarrow X_A = 20$$

$$\sum Y = 0: Y_A - 30 = 0 \Rightarrow Y_A = 30$$

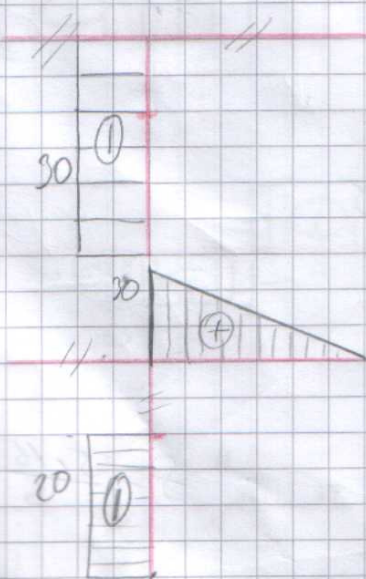
$$\sum M_A = 0: M_A + 15 + 30 \cdot 1,5 - 20 \cdot 2 = 0 \Rightarrow M_A = -20$$



$$f = \frac{3 \cdot 10}{3} = 11,25$$

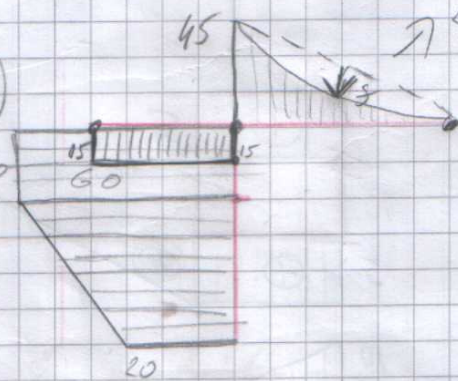
90° M max?

4



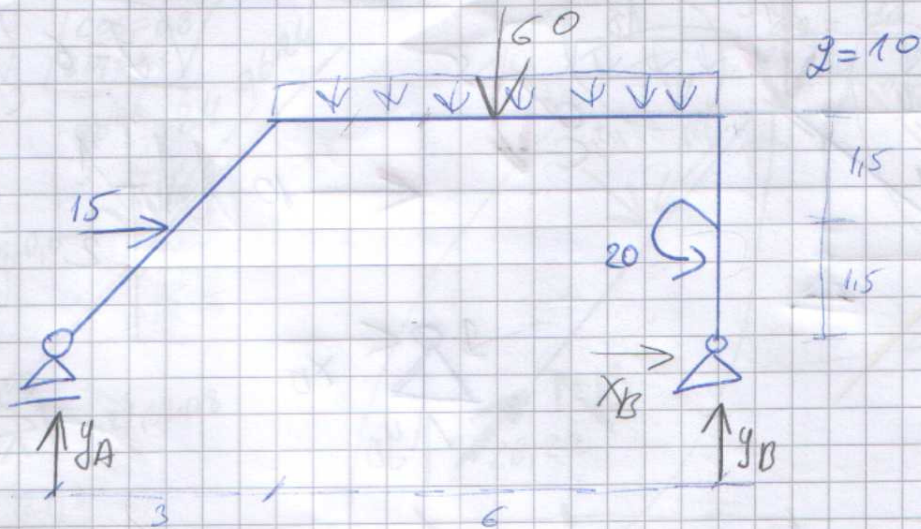
7

11





9



4

$$\sum X = 0: 15 + X_B = 0$$

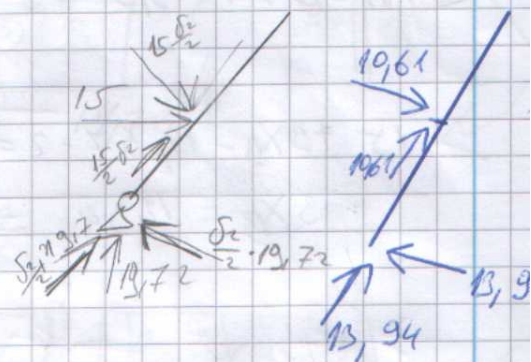
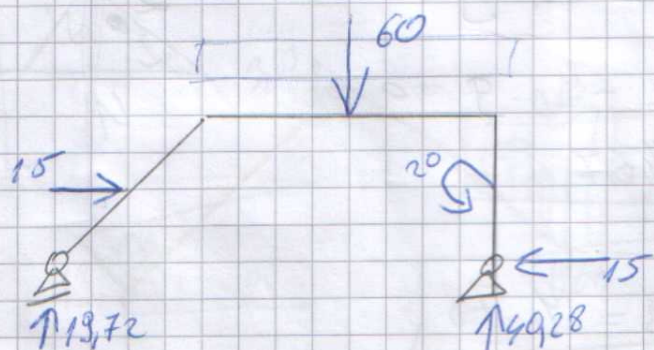
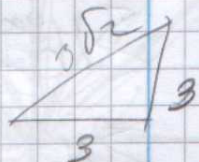
$$X_B = -15$$

$$\sum y = 0: y_A - 60 + y_B = 0$$

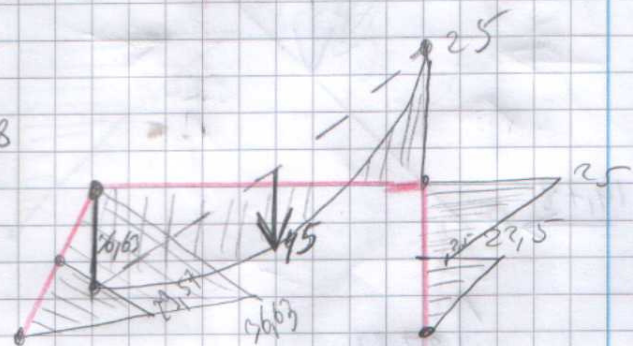
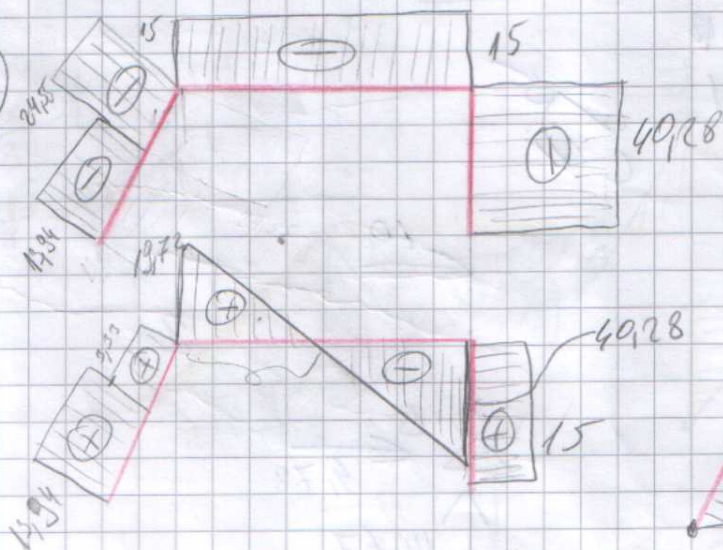
$$y_A = 19,72$$

$$\sum M_A = 0: 15 \cdot 1,5 + 60 \cdot 6 - 20 - y_B \cdot 9 = 0$$

$$y_B = 40,28$$



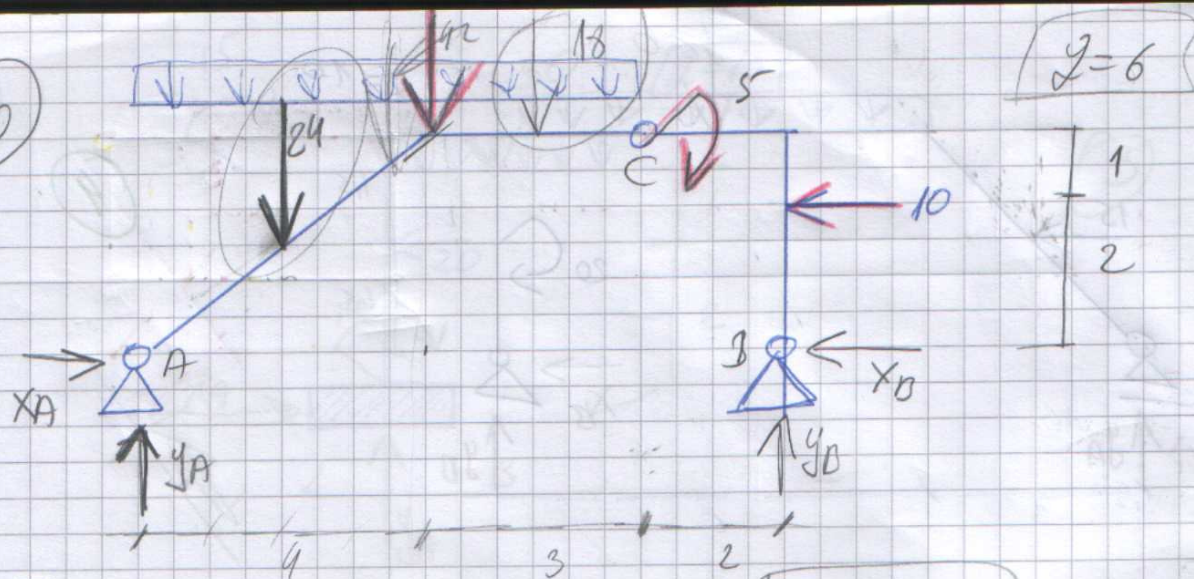
11



$$s = \frac{10 \cdot 6^2}{8} = 45$$



(10)



$$y = 6$$

(5)

$$\sum X = 0; X_A - 10 - X_B = 0$$

$$X_A = 14,78$$

$$\sum Y = 0; Y_A - 42 + Y_B = 0 \Rightarrow Y_A = 27,33$$

$$\sum M_C = 0: 5 + 10 + X_B \cdot 3 - Y_B \cdot 2 = 0$$

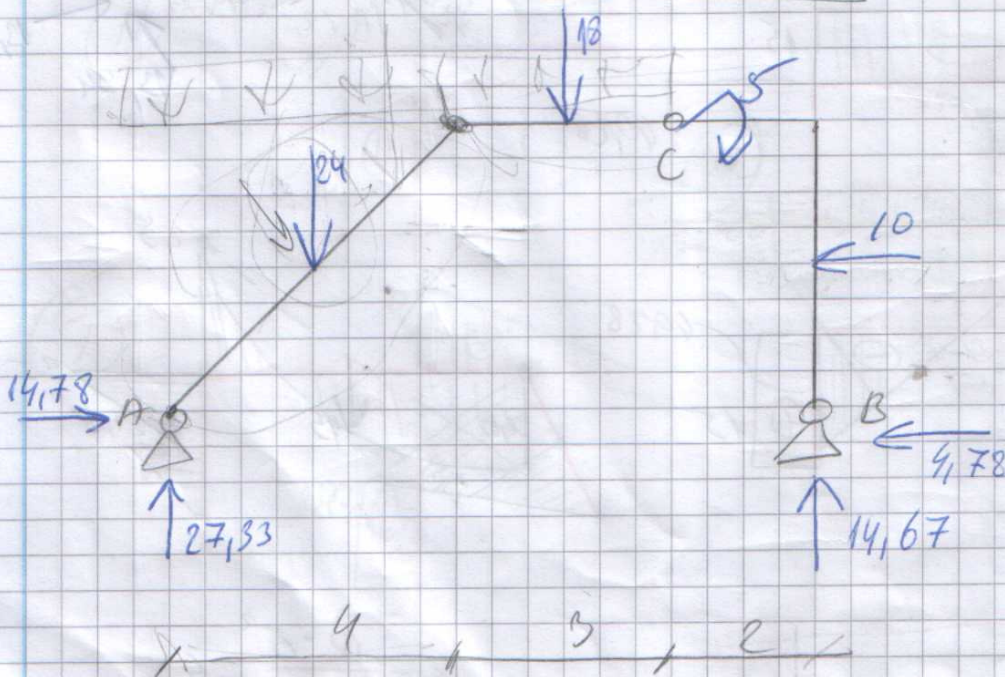
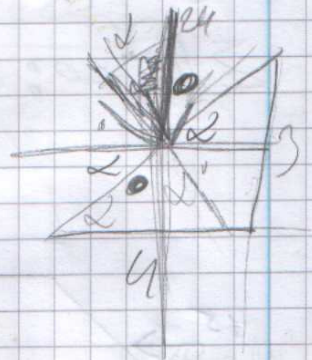
$$\sum M_C = 0: -42 \cdot 3,5 - X_A \cdot 3 + Y_A \cdot 9 = 0$$

$$\sum M_A = 0: 42 \cdot 3,5 + 5 - 10 \cdot 2 - Y_B \cdot 9 = 0$$

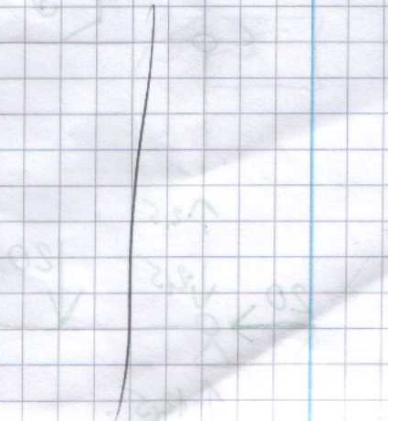
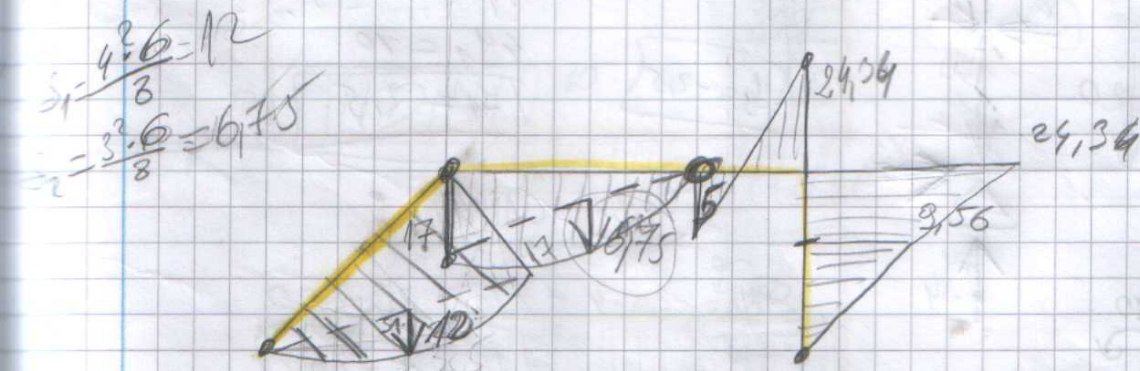
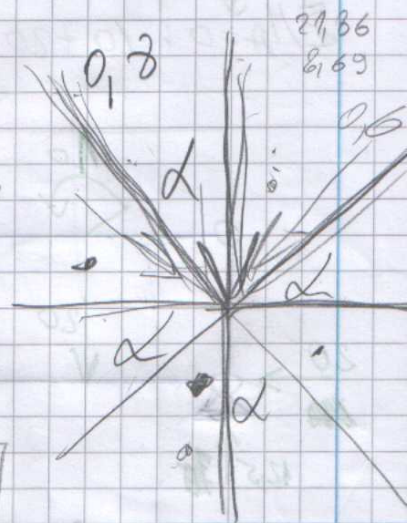
$$Y_B = 14,67$$

$$15 + 3X_B - 14,67 \cdot 2 = 0$$

$$3X_B = 14,34 \Rightarrow X_B = 4,78$$

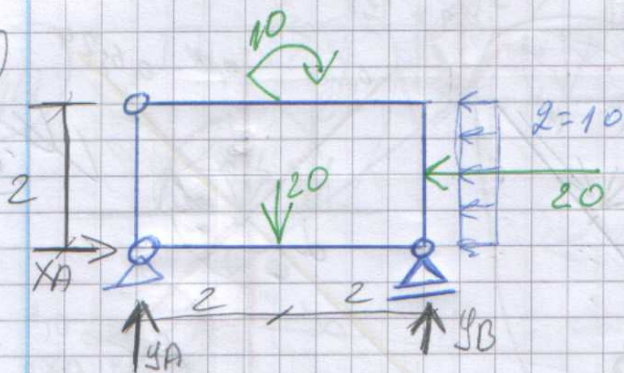








11



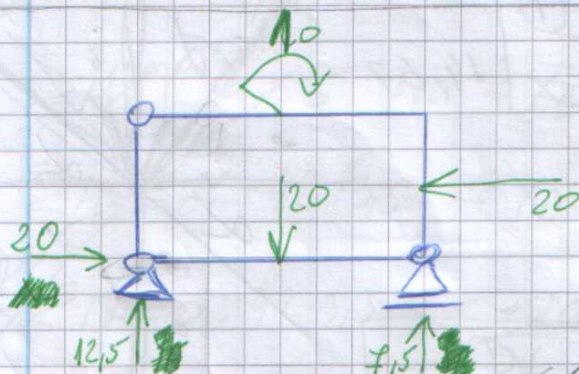
M

6

$$\sum X = 0: X_A - 20 = 0 \Rightarrow X_A = 20$$

$$\sum Y = 0: Y_A + Y_B - 20 = 0 \Rightarrow Y_A = 12,5$$

$$\sum M_A = 0: 10 + 20 \cdot 2 - 20 \cdot 2 - Y_B \cdot 4 = 0 \Rightarrow Y_B = 7,5$$



дополн. условия:

$$\textcircled{1} \sum M_E = 0: X_1 \cdot 2 = 0 \Rightarrow X_1 = 0$$

$$\sum X: X_1 - X_3 + 20 = 0 \Rightarrow X_3 = 20$$

$$\sum M_B = 0: X_1 \cdot 4 + 10 - 20 = 0$$

$$4X_1 = 10$$

$$X_1 = 2,5$$

дополн. условия:

$$\sum M_A = -2,5 \cdot 4 + Y_4 + 20 \cdot 2 = 0$$

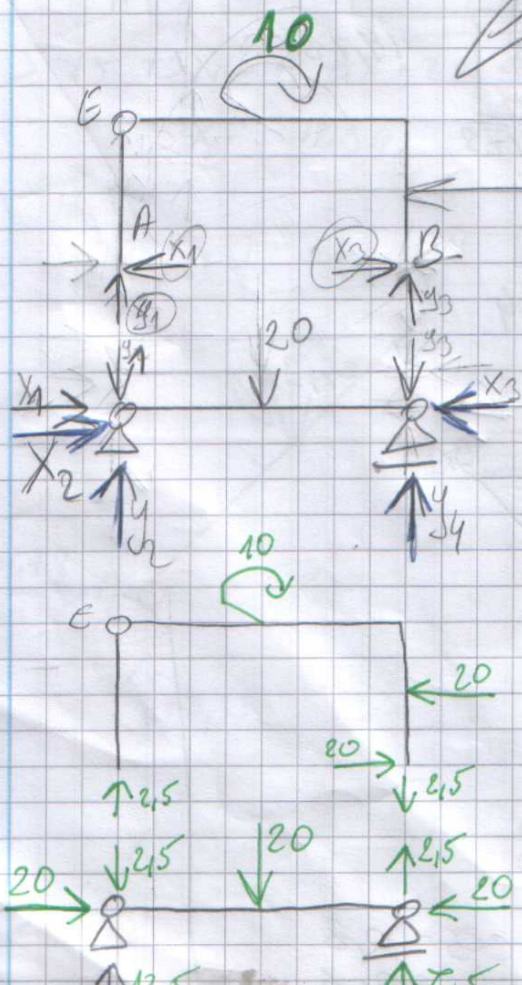
$$Y_4 = 7,5$$

$$\sum Y = 0: Y_A + Y_4 - 20 = 0$$

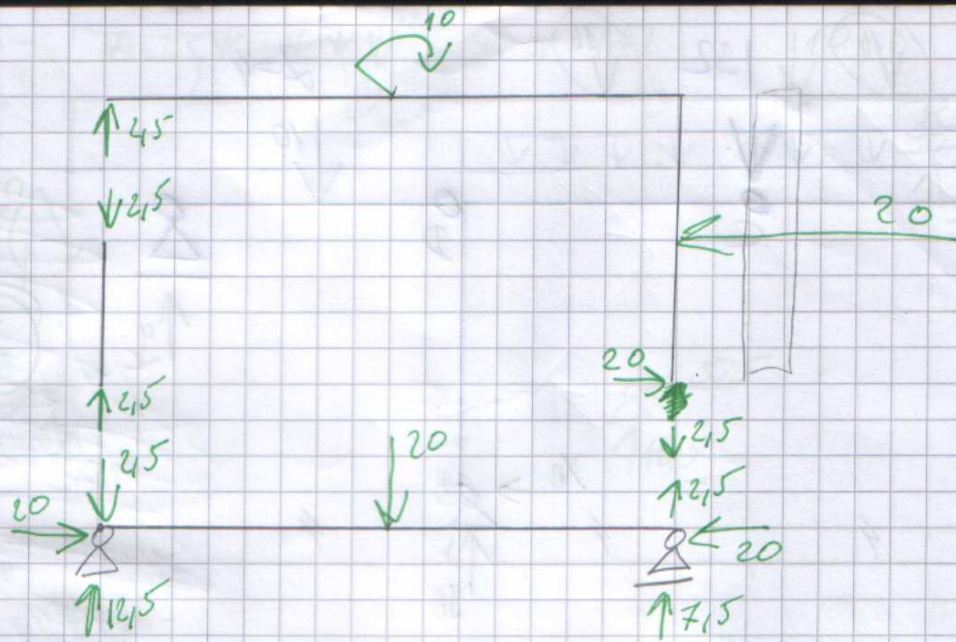
$$Y_A = 12,5$$

$$X_2 = X_3$$

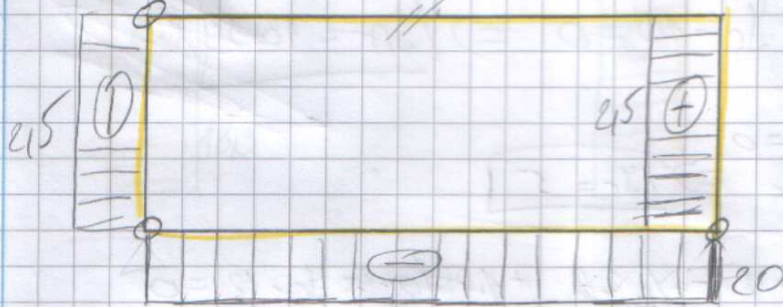
$$X_2 = 20$$



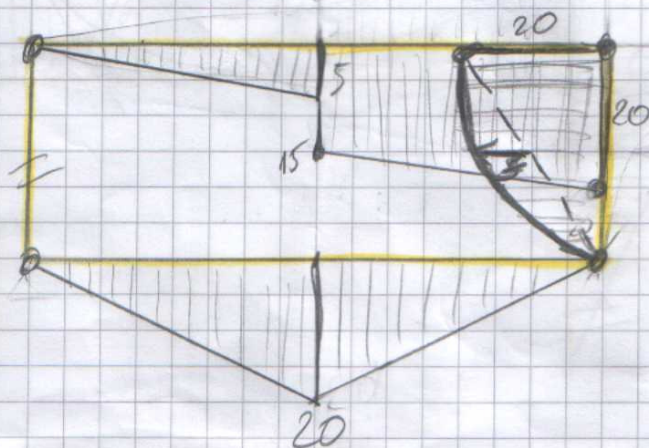
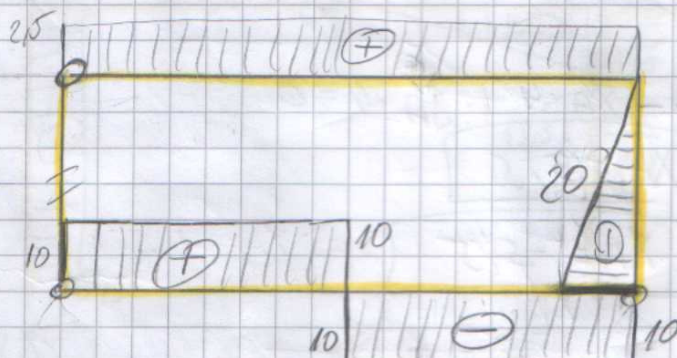




II



I

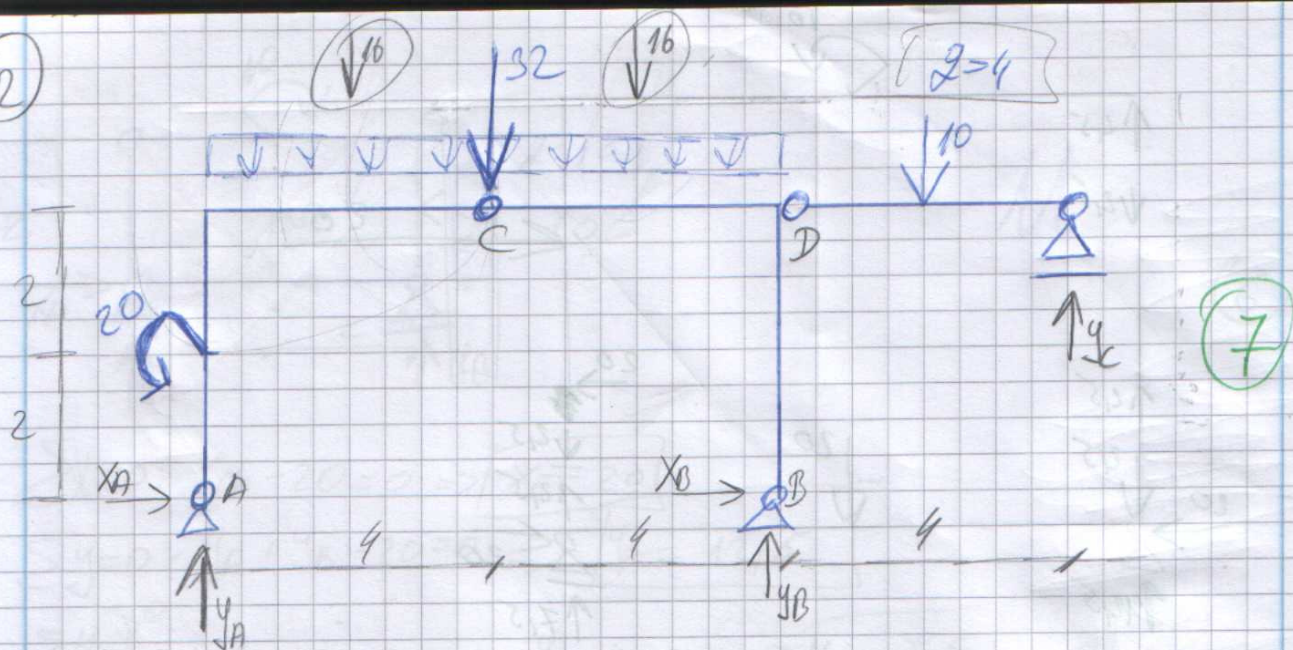


$$f = \frac{L \cdot 10}{8}$$

$$\sqrt{f} = 5$$



(12)



$$\sum X = 0: X_A + X_B = 0$$

$$\sum Y = 0: Y_A - 32 + Y_B + Y_C - 10 = 0 \Rightarrow \boxed{Y_A = 18,5}$$

$$\sum M_D = 0: 10 \cdot 2 - Y_C \cdot 4 = 0$$

$$20 = 4Y_C \Rightarrow \boxed{Y_C = 5}$$

$$\sum M_A = 0: -20 + 32 \cdot 4 - Y_B \cdot 8 + 10 \cdot 10 - Y_C \cdot 12 = 0$$

$$\boxed{Y_B = 18,5}$$

$$\sum M_C = 0: -16 \cdot 2 - 20 - X_A \cdot 4 + Y_A \cdot 4 = 0$$

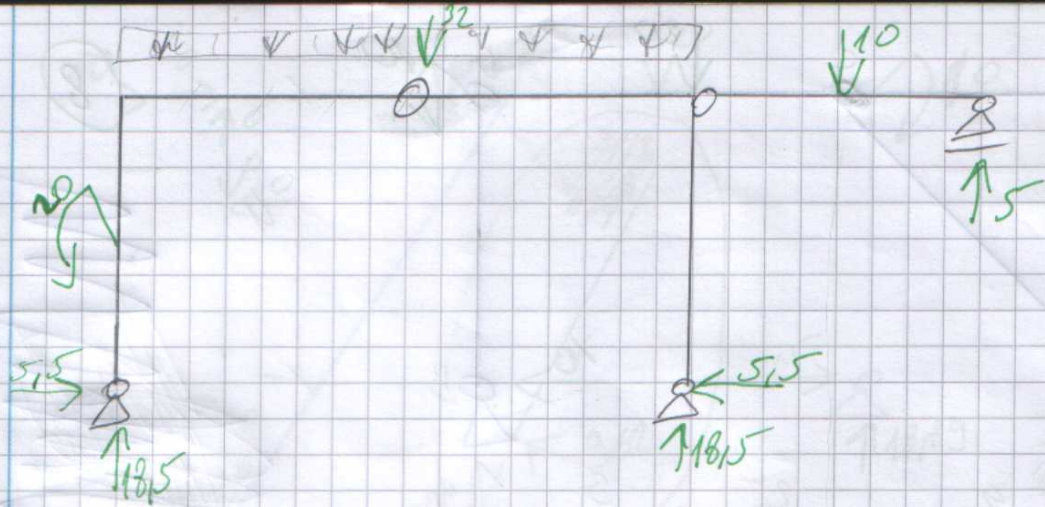
$$\boxed{X_A = 5,5}$$

$$\boxed{X_B = -5,5}$$

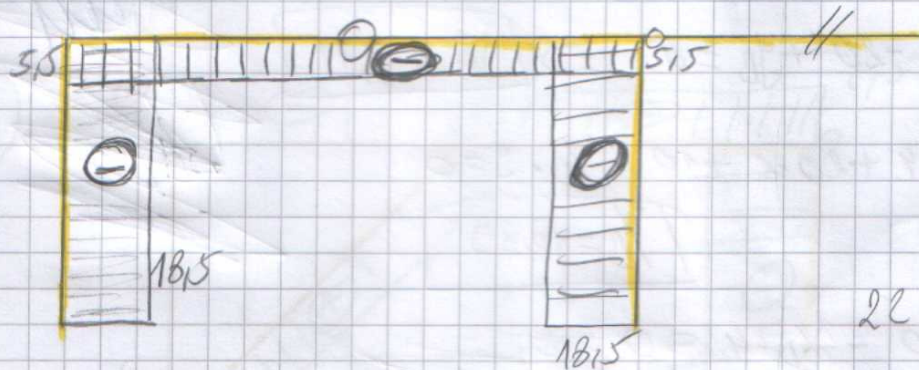
$$X_B = -5,5 = -18$$

$$Y_A = 18,5$$



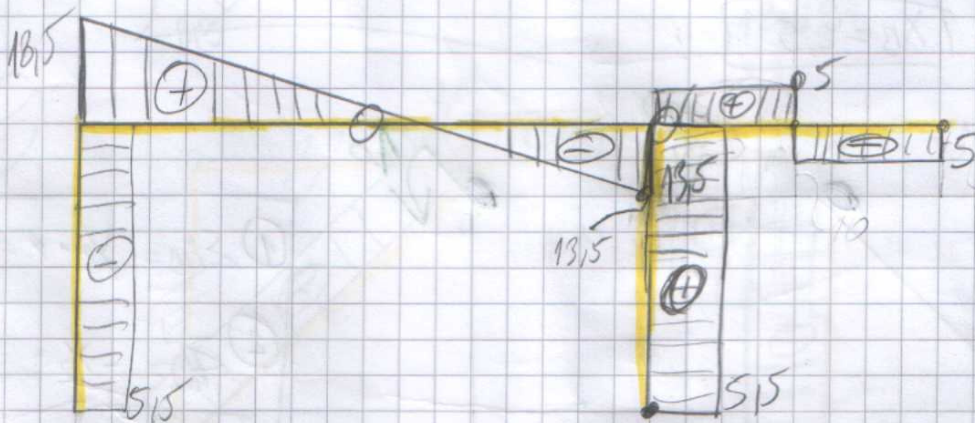


(H)



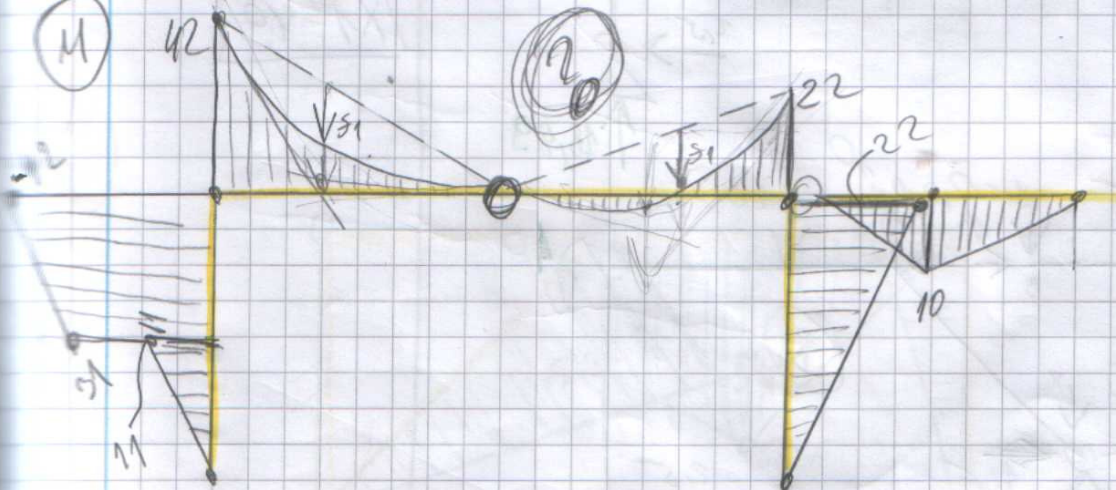
$$22 + \frac{13.5^2}{2 \cdot 4}$$

(T)



$$S_1 = \frac{4 \cdot 4}{8}$$

(M)







$$T_{YB} = 18,89$$

$$\overline{X_B} = 2,5$$

$$X_A = -12,5$$

