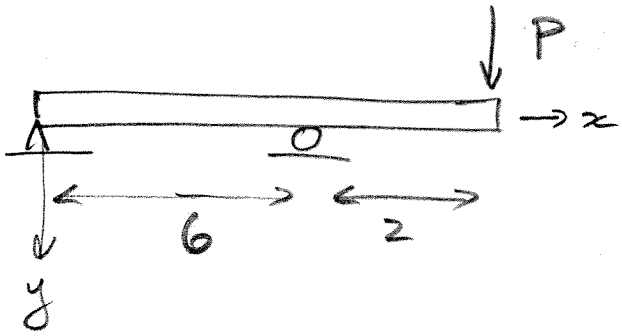
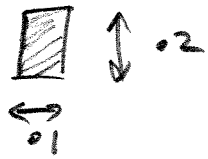
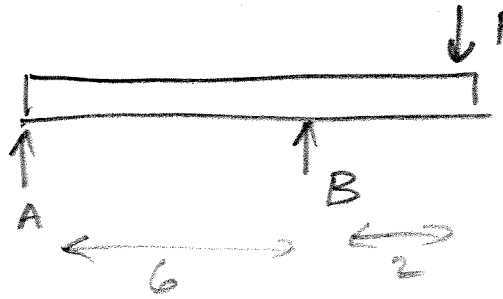
ME 423 Quiz # 7 name key





Find σ_x at $x=2$, $y=.1$. Your answer is proportional to load P as indicated.

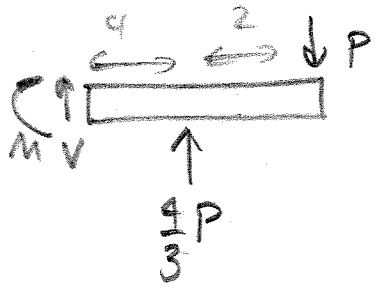


$$-P+A+B=0$$

$$\textcircled{A} \Rightarrow 6B-8P=0$$

$$B=\frac{4}{3}P \qquad A=-\frac{1}{3}P$$

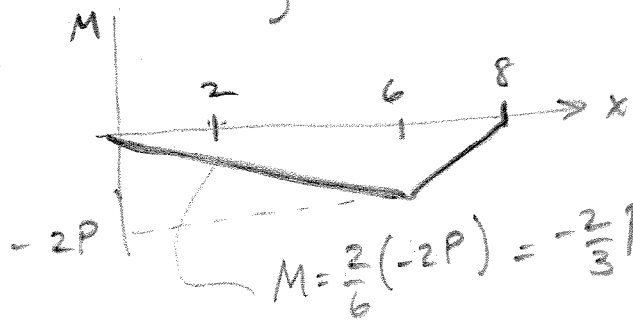
At $x=2$



$$x=2 \Rightarrow -M+4\left(\frac{4}{3}P\right)-6P=0$$

$$M=-\frac{2}{3}P$$

alternatively



$$M=\frac{2}{6}(-2P)=-\frac{2}{3}P$$

$$\sigma=\frac{My}{I}, \quad y=.1$$

$$I=\frac{1}{12}(.1)(.2)^3=6.666\times10^{-5}$$

$$\Rightarrow \sigma=\frac{-\frac{2}{3}P(.1)}{6.666\times10^{-5}}=\frac{-6.666\times10^{-2}}{6.666\times10^{-5}}P=\boxed{-1000P}$$