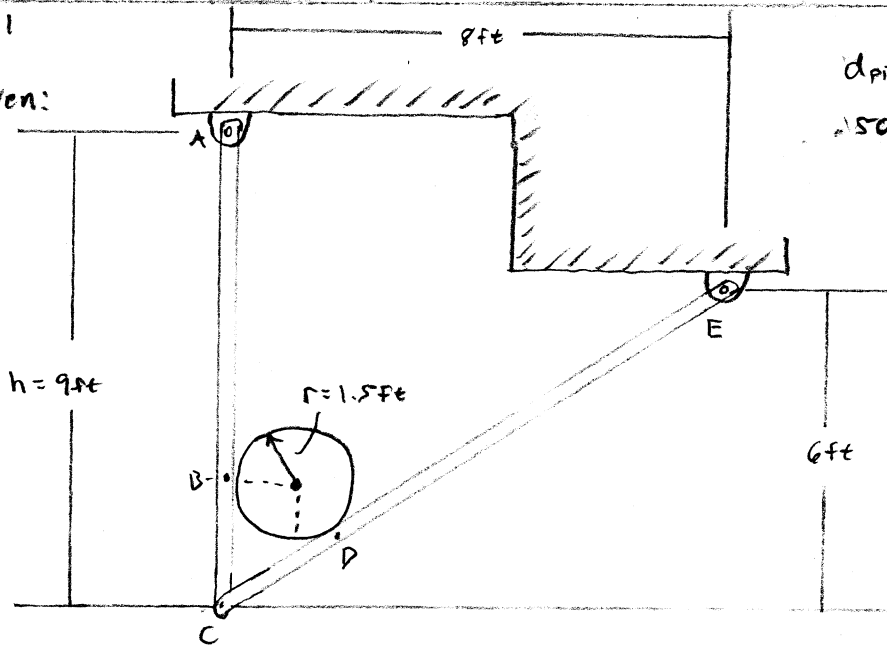


6.91

Given:



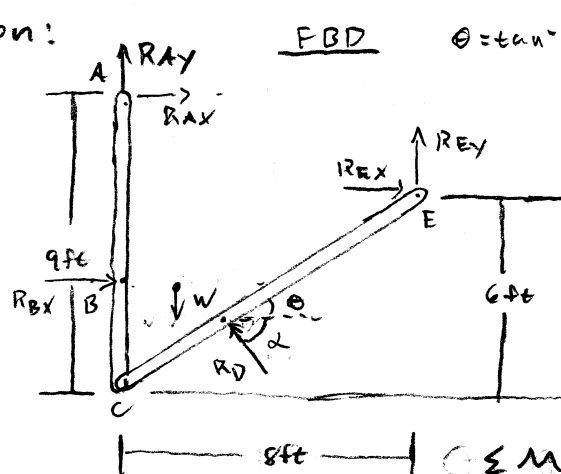
$$d_{\text{pipe}} = 3 \text{ ft}$$

$$w_{\text{pipe}} = 500 \text{ lb/ft}$$

$$W_{\text{pipe}} = 500 \text{ lb/ft} \cdot 16 \text{ ft} = 8000 \text{ lb}$$

Find: the components (a) of the reaction at E, (b) of the force exerted at C on member CDE.

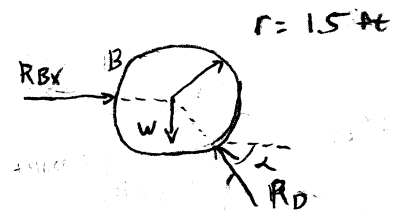
Solution:



FBD

$$\theta = \tan^{-1}\left(\frac{6}{8}\right) = 36.86^\circ$$

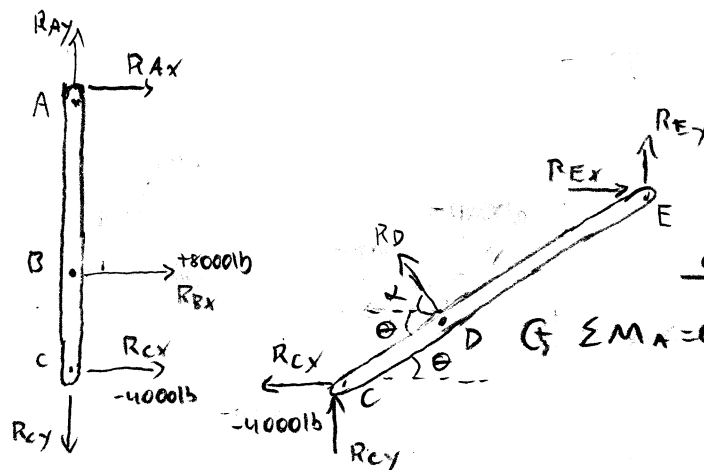
$$\alpha = 90^\circ - 36.86^\circ = 53.13^\circ$$



consider the pipe,

$$\sum M_D = 0, (1.5 \text{ ft})(8000 \text{ lb}) - (1.5 \text{ ft})(R_{Bx}) = 0$$

$$R_{Bx} = 8000 \text{ lb} \rightarrow$$



consider ABC

$$\sum M_A = 0, (4.5 \text{ ft})(8000) + (9 \text{ ft})(R_{Cx}) = 0$$

$$R_{Cx} = -4000 \text{ lb}$$

$$= 4000 \text{ lb} \leftarrow$$