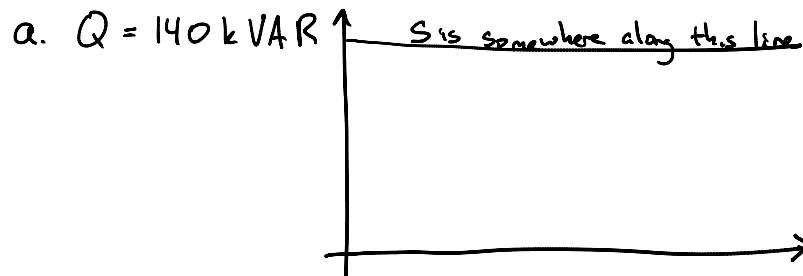
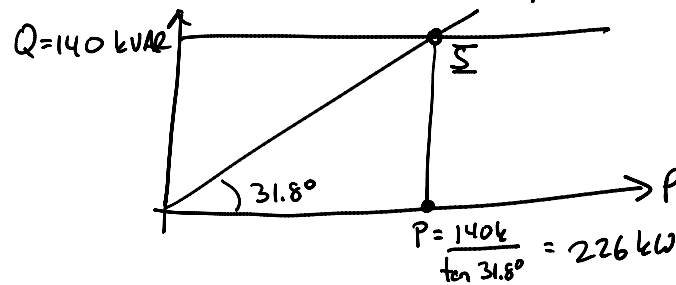


Find the value of the parallel capacitance needed to correct a load of 140kVAR at 0.85 lagging pf to unity pf. Assume load is supplied by 110V<sub>RMS</sub> at 60Hz.

1. Draw power triangle (always do this first!)



b.  $\text{pf} = 0.85 \text{ lagging} \Rightarrow \cos(\theta) = 0.85 \Rightarrow \theta = 31.8^\circ$   
positive since lagging



c. Want to keep  $P$  same but lower  $Q$  to zero for unity pf.  
To do this, must put in parallel capacitor that absorbs  
 $Q = -140 \text{ kVAR}$ .

d. Use given canned formula

$$C = \frac{Q_c}{\omega V_{\text{RMS}}^2} = \frac{140k}{(2\pi 60)(110)^2} = \boxed{30.7 \text{ mF}}$$