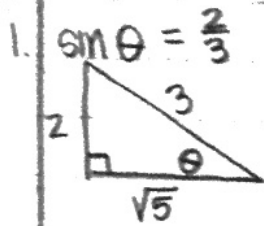
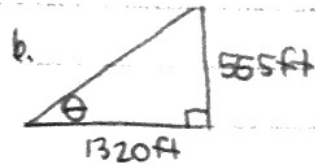


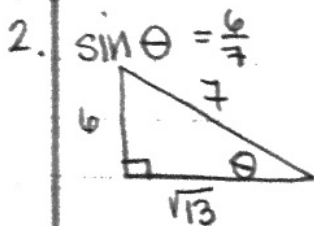
7.5



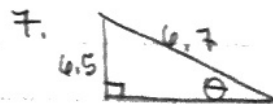
$$\begin{aligned}\cos \theta &= \frac{\sqrt{5}}{3} \\ \tan \theta &= \frac{2}{\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}} = \frac{2\sqrt{5}}{5} \\ \sec \theta &= \frac{3}{\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}} = \frac{3\sqrt{5}}{5} \\ \csc \theta &= \frac{3}{2} \\ \cot \theta &= \frac{\sqrt{5}}{2}\end{aligned}$$



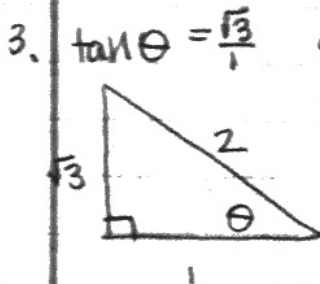
$$\begin{aligned}\tan \theta &= \frac{555}{1320} \\ \theta &= \tan^{-1}\left(\frac{555}{1320}\right) \\ \theta &= 22.805^\circ\end{aligned}$$



$$\begin{aligned}\cos \theta &= \frac{\sqrt{13}}{7} \\ \tan \theta &= \frac{6}{\sqrt{13}} \cdot \frac{\sqrt{13}}{\sqrt{13}} = \frac{6\sqrt{13}}{13} \\ \sec \theta &= \frac{7}{\sqrt{13}} \cdot \frac{\sqrt{13}}{\sqrt{13}} = \frac{7\sqrt{13}}{13} \\ \csc \theta &= \frac{7}{6} \\ \cot \theta &= \frac{\sqrt{13}}{6}\end{aligned}$$

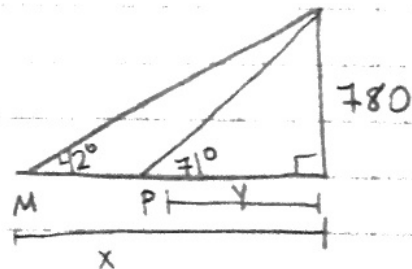


$$\begin{aligned}\sin \theta &= \frac{6.5}{6.7} \\ \theta &= \sin^{-1}\left(\frac{6.5}{6.7}\right) \approx 75.965^\circ\end{aligned}$$



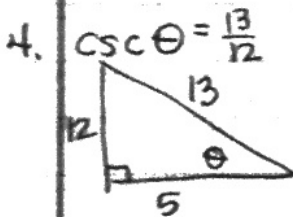
$$\begin{aligned}\sin \theta &= \frac{\sqrt{3}}{2} \\ \cos \theta &= \frac{1}{2} \\ \sec \theta &= 2 \\ \csc \theta &= \frac{2}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{2\sqrt{3}}{3} \\ \cot \theta &= \frac{1}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{\sqrt{3}}{3}\end{aligned}$$

8.

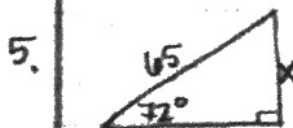


$$\begin{aligned}\tan 71 &= \frac{780}{y}, y = \frac{780}{\tan 71} \approx 268.576 \\ \tan 42 &= \frac{780}{x}, x = \frac{780}{\tan 42} \approx 866.278\end{aligned}$$

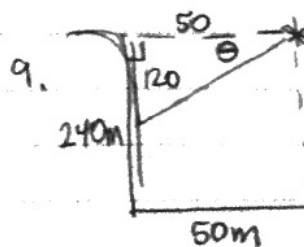
$$x - y = 597.702 \text{ ft}$$



$$\begin{aligned}\sin \theta &= \frac{12}{13} \\ \cos \theta &= \frac{5}{13} \\ \tan \theta &= \frac{12}{5} \\ \sec \theta &= \frac{13}{5} \\ \cot \theta &= \frac{5}{12}\end{aligned}$$

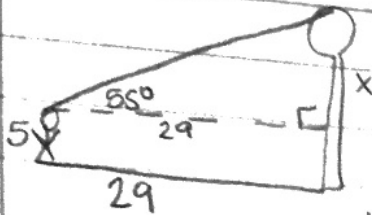


$$\begin{aligned}\tan 72 &= \frac{x}{65} \\ x &= 65 \tan 72 \\ x &= 200.049 \text{ m}\end{aligned}$$



$$\begin{aligned}\tan \theta &= \frac{120}{50} \\ \theta &= \tan^{-1}\left(\frac{12}{5}\right) \\ \theta &= 67.380^\circ\end{aligned}$$

10.



$$\tan 55^\circ = \frac{x}{29}$$

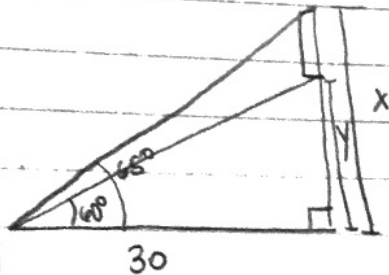
$$x = 29 \tan 55$$

$$x = 41.416$$

$$\text{tree} = 41.416 + 5$$

$$\boxed{46.416 \text{ ft}}$$

11.

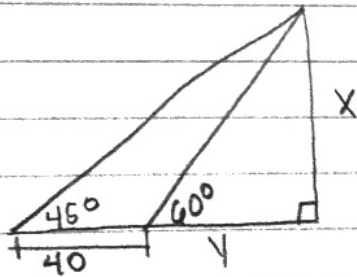


$$\tan 65 = \frac{x}{30} \quad x = 30 \tan 65 = 64.335$$

$$\tan 60 = \frac{y}{30} \quad y = 30 \tan 60 = 51.962$$

$$x - y = \boxed{12.374 \text{ ft}}$$

12.



$$\tan 60 = \frac{x}{y} \quad \tan 45 = \frac{x}{y+40}$$

$$y \tan 60 = x \quad (y+40) \tan 45 = x$$

$$y \tan 60 = (y+40) \tan 45$$

$$y \tan 60 = y \tan 45 + 40 \tan 45$$

$$y \tan 60 - y \tan 45 = 40 \tan 45$$

$$y (\tan 60 - \tan 45) = 40 \tan 45$$

$$y = \frac{40 \tan 45}{\tan 60 - \tan 45} \approx 54.641$$

$$\tan 60 - \tan 45$$

$$x = (54.641) \tan 60$$

$$\boxed{x = 94.641 \text{ ft}}$$