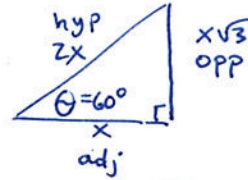


P6-3 Solutions

① $\frac{\pi}{3}$ radians \Leftrightarrow 60 degrees



Let $\theta = 60^\circ$.

$$\bullet \sin \theta = \frac{\text{opp}}{\text{hyp}} = \frac{x\sqrt{3}}{2x} = \boxed{\frac{\sqrt{3}}{2}}$$

$$\bullet \cos \theta = \frac{\text{adj}}{\text{hyp}} = \frac{x}{2x} = \boxed{\frac{1}{2}}$$

$$\bullet \tan \theta = \frac{\text{opp}}{\text{adj}} = \frac{x\sqrt{3}}{x} = \boxed{\sqrt{3}}$$

$$\bullet \csc \theta = \frac{2}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \boxed{\frac{2\sqrt{3}}{3}}$$

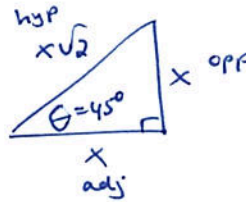
$$\bullet \sec \theta = \frac{2}{1} = \boxed{2}$$

$$\bullet \cot \theta = \frac{1}{\tan \theta} = \frac{1}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \boxed{\frac{\sqrt{3}}{3}}$$

There is a couple of ways to find the exact values. Answer solutions may vary.

Rationalizing is optional.

② $\frac{\pi}{4}$ radians \Leftrightarrow 45 degrees



Let $\theta = 45^\circ$.

$$\bullet \sin \theta = \frac{x}{x\sqrt{2}} = \frac{1}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \boxed{\frac{\sqrt{2}}{2}}$$

$$\bullet \cos \theta = \frac{x}{x\sqrt{2}} = \frac{1}{\sqrt{2}} = \boxed{\frac{\sqrt{2}}{2}}$$

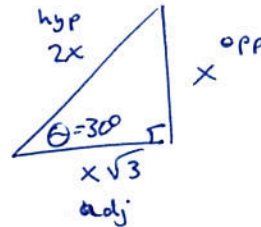
$$\bullet \tan \theta = \frac{x}{x} = \boxed{1}$$

$$\bullet \csc \theta = \frac{1}{\sin \theta} = \frac{1}{\frac{1}{\sqrt{2}}} = \frac{\sqrt{2}}{1} = \frac{2}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{2\sqrt{2}}{2} = \boxed{\sqrt{2}}$$

$$\bullet \sec \theta = \boxed{\sqrt{2}}$$

$$\bullet \cot \theta = \boxed{1}$$

③ $\frac{\pi}{6}$ radians \Leftrightarrow 30 degrees



Let $\theta = 30^\circ$.

$$\bullet \sin \theta = \frac{x}{2x} = \boxed{\frac{1}{2}}$$

$$\bullet \cos \theta = \frac{x\sqrt{3}}{2x} = \boxed{\frac{\sqrt{3}}{2}}$$

$$\bullet \tan \theta = \frac{x}{x\sqrt{3}} = \frac{1}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \boxed{\frac{\sqrt{3}}{3}}$$

$$\bullet \csc \theta = \frac{2}{1} = \boxed{2}$$

$$\bullet \sec \theta = \frac{2}{\frac{\sqrt{3}}{2}} = \frac{2}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \boxed{\frac{2\sqrt{3}}{3}}$$

$$\bullet \cot \theta = \frac{3}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{3\sqrt{3}}{3} = \boxed{\sqrt{3}}$$