PRACTICE QUIZ ANSWERS
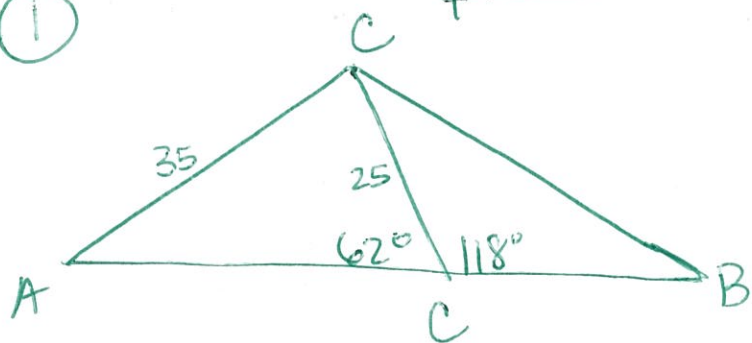
①

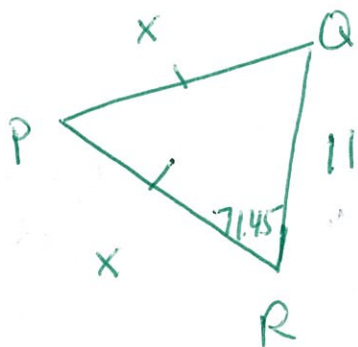Find ∠A.

$$\frac{\sin 62}{35} = \frac{\sin A}{25}$$

$$\frac{25 \sin 62}{35} = \sin A$$

$$\boxed{A = 39.1°}$$

②

Find the area.

$$x^2 = x^2 + 11^2 - 2(x)(11)\cos 71.45$$

$$x^2 = x^2 + 121 - 22x \cos 71.45$$

$$\frac{-121 = -22x \cos 71.45}{-22 \cos 71.45}$$

$$-22\cos 71.45$$

$$17.288 = x$$

$$A = \frac{1}{2} ab \sin C$$

$$A = \frac{1}{2} 11 (17.288) \sin 71.45$$

$$\boxed{A = 90.1 \text{ units}^2}$$

③ a. $\sin\left(\dfrac{4\pi}{3}\right)$
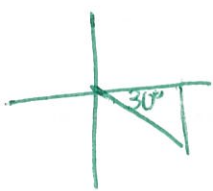
$$\boxed{-\dfrac{\sqrt{3}}{2}}$$

ⓑ $\tan\left(\dfrac{11\pi}{6}\right)$

$$\boxed{-\dfrac{\sqrt{3}}{3}}$$

ⓒ $\cos\left(-\dfrac{7\pi}{4}\right)$

$$\boxed{\dfrac{\sqrt{2}}{2}}$$

④ $\cos\theta = \dfrac{\sqrt{3}}{2}$ $\csc\theta < 0$ Find $\cot\theta$

$30°$

$$\cot 30 = \dfrac{\cos 30}{\sin 30} = \dfrac{\frac{\sqrt{3}}{2}}{-\frac{1}{2}} = \boxed{-\sqrt{3}}$$

⑤ $\sin(157.5) = \sin\left(\dfrac{315}{2}\right) = \sqrt{\dfrac{1-\cos 315}{2}} = \sqrt{\dfrac{1-\frac{\sqrt{2}}{2}}{2}} = \boxed{\dfrac{\sqrt{2-\sqrt{2}}}{2}}$

⑥ $\cos(165) = \cos(135+30) = \cos 135 \cos 30 + \sin 135 \cdot \sin 30$

$$= \left(-\dfrac{\sqrt{2}}{2}\right)\left(\dfrac{\sqrt{3}}{2}\right) + \left(\dfrac{\sqrt{2}}{2}\right)\left(\dfrac{1}{2}\right)$$

$$= \boxed{-\dfrac{\sqrt{6}+\sqrt{2}}{2}}$$

(7) Verify

$$\frac{\overbrace{\sin^2\theta + \cos^2\theta}^{1} + \cot^2\theta}{1 + \tan^2\theta} = \cot^2\theta$$

$$\frac{\overbrace{1 + \cot^2\theta}^{\csc^2}}{\underbrace{1 + \tan^2\theta}_{\sec^2}} = \cot^2\theta$$

$$\frac{\csc^2\theta}{\sec^2\theta} = \cot^2\theta$$

$$\cot^2\theta = \cot^2\theta \checkmark$$

$$\frac{\sin^2}{\cos^2} + \frac{\cos^2}{\cos^2} = \frac{1}{\cos^2}$$

$$\boxed{\tan^2 + 1 = \sec^2}$$

$$\boxed{1 + \cot^2 = \csc^2}$$

(8) $$\frac{\sin x}{\cos x + 1} + \frac{\cos x - 1}{\sin x} = 0$$

$$\left(\frac{\sin x}{\sin x}\right)\frac{\sin x}{\cos x + 1} + \frac{(\cos x - 1)}{\sin x}\left(\frac{\cos x + 1}{\cos x + 1}\right) = 0$$

$$\frac{\overbrace{\sin^2 x + \cos^2 x}^{1} - 1}{(\sin x)(\cos x + 1)} = 0$$

$$\frac{1 - 1}{(\sin x)(\cos x + 1)} = 0$$

$$\frac{0}{(\sin x)(\cos x + 1)} = 0$$

$$0 = 0 \checkmark$$

3/16/20