

# Chapter 4 Review 3200

1. D 2. C 3. B 4. B 5. B 6. C 7. A 8. C 9. B 10. A 11. C

$$\begin{aligned}\#12. \quad & \frac{\sqrt{2}}{2} + \left(\frac{-\sqrt{3}}{2}\right)^2 \sqrt{3} \\ &= \frac{\sqrt{2}}{2} + \frac{3}{4} \cdot \sqrt{3} \\ &= \frac{2\sqrt{2} + 3\sqrt{3}}{4}\end{aligned}$$

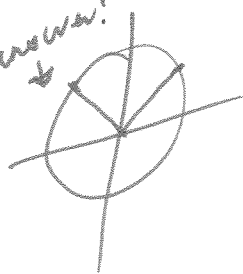
$$\#13. \quad \sin \frac{5\pi}{3} = -\frac{\sqrt{3}}{2} \quad \tan \frac{7\pi}{6} = \frac{\sqrt{3}}{3}$$

$$\begin{aligned}\frac{-\frac{2}{\sqrt{3}} + \frac{3}{\sqrt{3}}}{-\frac{1}{2}} &= \frac{\frac{1}{\sqrt{3}}}{-\frac{1}{2}} = \frac{1}{\sqrt{3}} \cdot \frac{2}{-1} \\ &= \frac{2}{-\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} \\ &= \frac{2\sqrt{3}}{-3}\end{aligned}$$

$$\begin{aligned}\#14. \quad \sin \theta &= 0.54 \\ \sin^{-1}(0.54) &= 0.57\end{aligned}$$

$$\theta = 0.57 \text{ radians}$$

2nd answer!

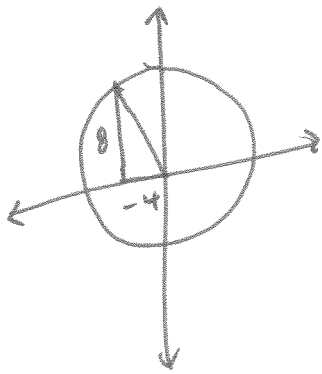


$$\pi - 0.57 = 2.57$$

Answer

0.57, 2.57, -5.71 (first restriction!)

#15  $(-4, 8)$



$$\begin{aligned}(-4)^2 + 8^2 &= r^2 \\ 16 + 64 &= r^2 \\ r &= \sqrt{80} \\ r &= 4\sqrt{5}\end{aligned}$$

$$\cos \theta = \frac{x}{r}$$

$$= \frac{-4}{4\sqrt{5}}$$

$$= \frac{-1}{\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}}$$

$$= \frac{-\sqrt{5}}{5}$$

$$\sin \theta = \frac{y}{r}$$

$$= \frac{8}{4\sqrt{5}}$$

$$= \frac{2}{\sqrt{5}}$$

$$= \frac{2\sqrt{5}}{5}$$

$$\tan \theta = \frac{y}{x}$$

$$= \frac{8}{-4}$$

$$= -2$$

$$\sec \theta = -\sqrt{5}$$

$$\csc \theta = \frac{\sqrt{5}}{2}$$

$$\cot \theta = -\frac{1}{2}$$

Reference Angle =  $63^\circ$        $\theta = 117^\circ$

$$\#16 \quad 6 \tan^2(x) - \tan x - 15 = 0$$

(General Solution)

$$\text{let } \tan x = y$$

$$6y^2 - y - 15 = 0$$

$$(3y-5)(2y+3) = 0$$

$$y = \frac{5}{3} \quad \text{or} \quad y = -\frac{3}{2}$$

$$\tan x = \frac{5}{3} \quad \text{or} \quad \tan x = -\frac{3}{2}$$

1st Q  $\nabla$  3rd Q

$$\tan^{-1}(5/3) = 59^\circ$$

$$\text{2nd answer } 180 + 59^\circ = 239^\circ$$

2nd Q  $\nabla$  4th Q

$$\tan^{-1}(-3/2) = -56^\circ$$

$$\text{1st answer } 304^\circ$$

$$\text{2nd answer } 180 - 56^\circ = 124^\circ$$

General Solution

$$X = \left\{ \begin{array}{l} 59^\circ \pm 360^\circ n, n \in \mathbb{N} \\ 239^\circ \pm 360^\circ n, n \in \mathbb{N} \\ 124^\circ \pm 360^\circ n, n \in \mathbb{N} \\ 304^\circ \pm 360^\circ n, n \in \mathbb{N} \end{array} \right.$$

$$17. \quad \sec^2 x = 3 \sec x - 2$$

$$\sec^2 x - 3 \sec x + 2 = 0$$

$$\text{let } y = \sec x$$

$$y^2 - 3y + 2 = 0$$

$$(y-2)(y-1) = 0$$

$$y = 2 \text{ or } y = 1$$

$$\sec x = 2 \quad \text{or} \quad \sec x = 1$$

$$\cos x = \frac{1}{2}$$

$$\cos x = 1$$

$$x = \frac{\pi}{3}, \frac{5\pi}{3}$$

$$x = 0, 2\pi$$

Restriction!

$$-\pi \leq x < 2\pi$$

$$x = \frac{\pi}{3}, \frac{5\pi}{3}, 0, \frac{-\pi}{3}$$