

8-1

#139

p 299 OE

$$1 \quad \cos \theta = \frac{1}{2}; \text{Q I}; \text{Q IV} \\ 60^\circ; 300^\circ$$

$$\textcircled{3} \quad \csc \theta = 2$$

$$\sin \theta = \frac{1}{2} \quad \text{Q I}; \text{Q II}$$

$$30^\circ; 180^\circ - 30^\circ = 150^\circ$$

$$5 \quad \cos x = -\frac{\sqrt{3}}{2} \quad \text{Q II}; \text{Q III} \\ \text{Q II: } \frac{5\pi}{6} \quad \text{Q III: } \frac{7\pi}{6}$$

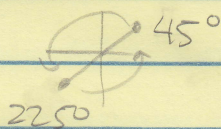
$$\textcircled{7} \quad \tan x = -\sqrt{3} \quad \text{Q II}; \text{Q IV} \\ \text{Q II: } \frac{2\pi}{3} \quad \text{Q IV: } \frac{5\pi}{3}$$

$$9 \quad \cos \theta = -1$$

$$\textcircled{11} \quad \tan \theta = 1 \quad \text{Q I}; \text{Q III}$$

$$(-1, 0) \quad \bullet \quad +$$

$$180^\circ + n \cdot 360^\circ \quad (n \text{ is an integer})$$



$$\theta = 45^\circ + n \cdot 180^\circ$$

$n$  is an integer

$$13 \quad m = \frac{3}{5} \rightarrow \tan \theta = \frac{3}{5} \\ \theta = \tan^{-1}\left(\frac{3}{5}\right) = 31^\circ$$

$$\text{WE 1.} \quad \sin \theta = -0.7 \rightarrow \text{Q III}; \text{Q IV}$$

$$\text{Ref } \angle: \sin^{-1}(0.7)$$

$$\text{Q III: } 180^\circ + \sin^{-1}(0.7) = 224.4^\circ$$

$$\text{Q IV: } 360^\circ - \sin^{-1}(0.7) = 315.6^\circ$$

$$\textcircled{3} \quad \tan \theta = 1.2; \text{Q I}; \text{Q III}$$

$$\text{Ref } \angle: \tan^{-1}(1.2)$$

$$\text{Q I: } \tan^{-1}(1.2) \approx 50.2^\circ$$

$$\text{Q III: } 180^\circ + \tan^{-1}(1.2) \approx 230.2^\circ$$

$$5 \quad \sec \theta = -5 \rightarrow \cos \theta = -\frac{1}{5} \rightarrow \text{Q II}; \text{Q III} \quad \textcircled{7} \quad 3 \cos \theta = 1$$

$$\text{Ref } \angle: \cos^{-1}\left(\frac{1}{5}\right)$$

$$\text{Q II: } 180^\circ + \cos^{-1}\left(\frac{1}{5}\right) = 258.5^\circ$$

$$\text{Q III: } 180^\circ - \cos^{-1}\left(\frac{1}{5}\right) = 101.5^\circ$$

$$\cos \theta = \frac{1}{3} \rightarrow \text{Q I}; \text{Q IV}$$

$$\text{Ref } \angle: \cos^{-1}\left(\frac{1}{3}\right)$$

$$\text{Q I: } \cos^{-1}\left(\frac{1}{3}\right) \approx 70.5^\circ$$

$$\text{Q IV: } 360^\circ - \cos^{-1}\left(\frac{1}{3}\right) = 289.5^\circ$$

$$9 \quad 5 \sec \theta + 6 = 0 \rightarrow \sec \theta = -\frac{6}{5}$$

$$\cos \theta = -\frac{5}{6}; \text{Q II}; \text{Q III}$$

$$\text{Ref } \angle: \cos^{-1}\left(\frac{5}{6}\right)$$

$$\text{Q II: } 180^\circ - \cos^{-1}\left(\frac{5}{6}\right) = 146.4^\circ$$

$$\text{Q III: } 180^\circ + \cos^{-1}\left(\frac{5}{6}\right) = 213.6^\circ$$

$$\textcircled{11} \quad \csc \theta = \frac{9}{6} \rightarrow \sin \theta = \frac{6}{9} = \frac{2}{3}; \text{Q I}; \text{Q II}$$

$$\text{Ref } \angle: \sin^{-1}\left(\frac{2}{3}\right) = 41.8^\circ$$

$$\text{Q I: } 41.8^\circ$$

$$\text{Q II: } 180^\circ - \sin^{-1}\left(\frac{2}{3}\right) = 138.2^\circ$$

13  $\tan x = -1.5$  Q II; Q IV

Ref L:  $\tan^{-1}(1.5) = 0.98$

Q II:  $\pi - \tan^{-1}(1.5) = 2.16$

Q IV:  $2\pi - \tan^{-1}(1.5) = 5.30$

(15)  $\csc x = -1.4 \rightarrow \sin x = \ominus \frac{10}{14} = \ominus \frac{5}{7}$

Ref L:  $\sin^{-1}(\frac{5}{7}) = 0.80$

Q III:  $\pi + \sin^{-1}(\frac{5}{7}) = 3.94$

Q IV:  $2\pi - \sin^{-1}(\frac{5}{7}) = 5.49$

17.  $\cot x = 6 \rightarrow \tan x = \frac{1}{6}$

Ref L:  $\tan^{-1}(\frac{1}{6}) = .17$

Q I: 0.17

Q III:  $\pi + \tan^{-1}(\frac{1}{6}) \approx 3.31$

(19)  $8 = 9 \cos x + 2$

$9 \cos x = 6 \rightarrow \cos x = \frac{6}{9} = \frac{2}{3}$

Ref L:  $\cos^{-1}(\frac{2}{3}) \approx 0.84$

Q I: 0.84

Q IV:  $2\pi - \cos^{-1}(\frac{2}{3}) \approx 5.44$

21.  $\frac{3 \cot x}{4} = -1 \rightarrow 3 \cot x = -4$

$\cot x = -\frac{4}{3}$

$\tan x = -\frac{3}{4}$

Ref L:  $\tan^{-1}(\frac{3}{4}) \approx 0.64$

Q II:  $\pi - \tan^{-1}(\frac{3}{4}) \approx 2.50$

Q IV:  $2\pi - \tan^{-1}(\frac{3}{4}) \approx 5.64$

(23)  $m = \tan 120^\circ = -\sqrt{3}; (2, 3)$

$y - 3 = -\sqrt{3}(x - 2)$

$y - 3 = -\sqrt{3}x + 2\sqrt{3}$

$y = -\sqrt{3}x + 2\sqrt{3} + 3$

25  $3x + 5y = 8$

$5y = -3x + 8$

$y = -\frac{3}{5}x + \frac{8}{5}$

$m = -\frac{3}{5}$  obtuse

$\theta = 180^\circ - \tan^{-1}(\frac{3}{5}) \approx 149^\circ$

(27)  $m = \frac{1-2}{4-1} = \frac{-1}{3} \rightarrow$  obtuse

$\theta = 180^\circ - \tan^{-1}(\frac{1}{3}) \approx 169^\circ$

(29)  $4x + 3y = 12$

$3y = -4x + 12$

$y = -\frac{4}{3}x + 4$   $m_1 = -\frac{4}{3}$

$m \perp = \frac{3}{4} \rightarrow$  acute

$\theta = \tan^{-1}(\frac{3}{4}) \approx 37^\circ$