

Q.1 Exercises.

29. 50° soln

$$= 50 + 360 = 410 + 360 = 770$$

$$= 50 - 360 = -310 - 360 = -670$$

$$\therefore \text{Ans: } 410, 770, -310, -670$$

33. $-\frac{\pi}{4}$ soln

$$-\frac{\pi}{4} + 2\pi = \frac{7}{4}\pi + 2\pi = \frac{15}{4}\pi$$

$$-\frac{\pi}{4} - 2\pi = -\frac{9}{4}\pi - 2\pi = -\frac{17}{4}\pi$$

$$\therefore \text{Ans: } \frac{7}{4}\pi, \frac{15}{4}\pi, -\frac{9}{4}\pi, -\frac{17}{4}\pi$$

37. $\frac{5}{6}\pi, \frac{17}{6}\pi$ soln

$$\frac{5}{6}\pi + 2\pi = \frac{17}{6}\pi$$

Hence they are coterminal.

41. 400°

$$400^\circ - 360^\circ = 40^\circ$$

$$\text{Ans} = 40^\circ$$

(45) -800°

$$= 800^\circ + 720^\circ = -80^\circ + 360^\circ = 280^\circ$$

$$= 280^\circ$$

49. 25π

$$25\pi - 12(2\pi) = \underline{\underline{\pi}}$$

$$53. \theta = \frac{5}{6} \pi$$

$$= \frac{5}{6} \pi \times 9 = 7.5 \pi \text{ radians}$$

$$57. s = 3 \text{ rad}$$

$$\text{radius} = 5 \text{ cm.}$$

$$= 3 \times 5 = 15 \text{ cm.}$$

$$61. \frac{5}{6} \pi \Rightarrow \theta$$

$$r = ?$$

$$s = 15 \text{ m.}$$

$$s = \theta \times r$$

$$15 = \frac{5}{6} \pi \times r$$

$$r = 15 \times \frac{6}{5\pi} = \frac{18}{\pi}$$

$$= 5.7296$$

$$65. A = \frac{1}{2} r^2 \theta$$

$$= \frac{1}{2} \times \frac{2}{3} \pi \times 100 = \frac{100}{3} \pi \text{ m}^2$$

$$69. A = \frac{1}{2} r^2 \theta$$

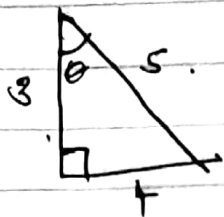
$$1600 = \frac{1}{2} \times 80^2 \times \theta$$

$$1600 = \frac{1}{2} \times 6400 \times \theta$$

$$\theta = 0.5 \text{ rads}$$

6.2 Exercises

3.



$$\sin \theta = \frac{\text{opp}}{\text{hyp}} = \frac{4}{5}$$

$$\csc \theta = \frac{1}{\sin \theta} = \frac{5}{4}$$

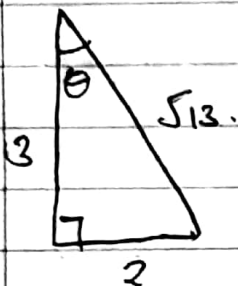
$$\cos \theta = \frac{\text{adj}}{\text{hyp}} = \frac{3}{5}$$

$$\sec \theta = \frac{1}{\cos \theta} = \frac{5}{3}$$

$$\tan \theta = \frac{\text{opp}}{\text{adj}} = \frac{4}{3}$$

$$\cot \theta = \frac{1}{\tan \theta} = \frac{3}{4}$$

7.



$$\text{hyp} = \sqrt{9+4} = \sqrt{13}$$

$$\sin \theta = \frac{\text{opp}}{\text{hyp}} = \frac{2}{\sqrt{13}} = \frac{2\sqrt{13}}{13}$$

$$\csc \theta = \frac{1}{\sin \theta} = \frac{\sqrt{13}}{2}$$

$$\cos \theta = \frac{\text{adj}}{\text{hyp}} = \frac{2}{\sqrt{13}} = \frac{2\sqrt{13}}{13}$$

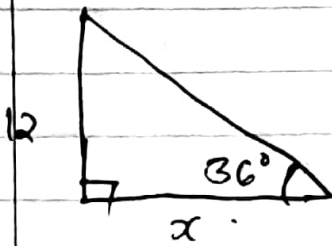
$$\sec \theta = \frac{1}{\cos \theta} = \frac{\sqrt{13}}{2}$$

$$\tan \theta = \frac{\text{opp}}{\text{adj}} = \frac{3}{2}$$

$$\cot \theta = \frac{1}{\tan \theta} = \frac{2}{3}$$

$$\sin 22^\circ = 0.3746$$

19.



soln.

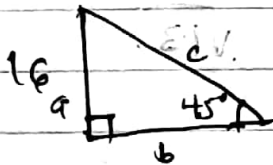
$$\tan \theta = \frac{\text{opp}}{\text{adj}}$$

$$\tan 36^\circ = \frac{12}{x}$$

$$x = \frac{12}{\tan 36^\circ} = \frac{12}{0.72654}$$

$$x = \underline{16.51658}$$

37.



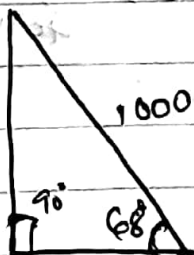
$$\tan \theta = \frac{\text{opp}}{\text{adj}}$$

$$\tan 45^\circ = \frac{16}{b} \quad b = \frac{16}{\tan 45^\circ} = 16$$

$$c = \sqrt{16^2 + 16^2}$$

$$c = 22.627$$

40.



$$\sin \theta = \frac{\text{opp}}{\text{hyp}}$$

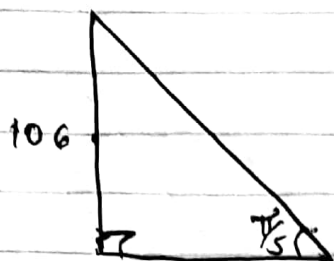
$$\text{opp} = \sin 68^\circ \times 1000$$

$$= 927.18485$$

$$\cos \theta = \frac{\text{adj}}{\text{hyp}} \Rightarrow \cos 68^\circ = \frac{\text{adj}}{1000}$$

$$\text{adj} = 1000 \times \cos 68^\circ = \underline{374.60659}$$

43.



$$\theta = 180 \times \frac{1}{5} = 36^\circ$$

$$\sin \theta = \frac{\text{opp}}{\text{hyp}}$$

$$\Rightarrow \text{opp} = \sin \theta \times \text{hyp}$$

$$= \sin 36^\circ \times$$

$$\text{hyp} = \frac{\text{opp}}{\sin \theta} \Rightarrow \frac{106}{\sin 36^\circ} = 180.33797$$

$$\tan \theta = \frac{\text{opp}}{\text{adj}}$$

$$\text{adj} = \frac{\text{opp}}{\tan \theta} = \frac{106}{\tan 36^\circ} = 145.89648$$

6.3 Exercises.

5. (a) 120°

soln

$$= 180^\circ - 120^\circ = 60^\circ$$

(b) 200°

$$= 200^\circ - 180^\circ = 20^\circ$$

(c) 285°

$$= 360^\circ - 285^\circ = 75^\circ$$

9 (a) $\frac{7}{10} \pi$

$$= \pi - \frac{7}{10} \pi = \frac{3}{10} \pi$$

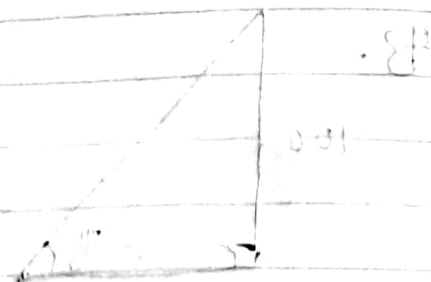
(b) $\frac{9}{8} \pi$

$$= \frac{9}{8} \pi - \pi = \frac{1}{8} \pi$$

$$(C) \frac{23}{1} \pi$$

$$\frac{23}{1} \pi - 2\pi = \frac{9}{1} \pi$$

$$= \frac{9}{1} \pi - \pi = \frac{8}{1} \pi$$



$$13. \cos 150^\circ = -\frac{\sqrt{3}}{2} \text{ or } -0.866025$$

$$17. \cot(-120^\circ)$$

$$-120 + 360 = 240^\circ$$

$$\cot(240^\circ) = \frac{1}{\tan(240^\circ)} = \frac{\sqrt{3}}{3} \text{ or } 0.57735$$

$$21. \cos(570^\circ)$$

soln.

$$570 - 360 = 210$$

$$= \cos(210^\circ) = -\frac{\sqrt{3}}{2} \text{ or } -0.866025$$

$$25. \sin\left(\frac{3}{2} \pi\right)$$

$$= \sin(270^\circ) = -1$$

$$29. \csc\left(-\frac{5\pi}{6}\right)$$

$$= \csc(-150^\circ) = \csc(210^\circ) = \csc(150^\circ)$$

$$= \frac{1}{\cos(210^\circ)} = \frac{1}{-\frac{\sqrt{3}}{2}} = -\frac{2}{\sqrt{3}}$$

$$31. \sec \left(\frac{11}{3} \pi \right)$$

$$= \sec(1020^\circ) = \frac{1}{\sin 1020} = \underline{\underline{2.}}$$

$$35. \tan \frac{5}{2} \pi$$

$$= \tan(450) = \underline{\underline{\text{undefined}}}.$$