

4.1 HW Answers

Tuesday, September 26, 2017 11:45 AM

$$7. \quad \theta = \frac{s}{r} = \frac{40 \text{ inches}}{10 \text{ inches}} = 4 \text{ radians}$$

$$9. \quad \theta = \frac{s}{r} = \frac{8 \text{ yards}}{6 \text{ yards}} = \frac{4}{3} \text{ radians}$$

$$11. \quad \theta = \frac{s}{r} = \frac{400 \text{ centimeters}}{100 \text{ centimeters}} = 4 \text{ radians}$$

$$14. \quad 18^\circ = 18^\circ \cdot \frac{\pi \text{ radians}}{180^\circ} \\ = \frac{18\pi}{180} \text{ radians} \\ = \frac{\pi}{10} \text{ radians}$$

$$16. \quad 150^\circ = 150^\circ \cdot \frac{\pi \text{ radians}}{180^\circ} \\ = \frac{150\pi}{180} \text{ radians} \\ = \frac{5\pi}{6} \text{ radians}$$

$$18. \quad 330^\circ = 330^\circ \cdot \frac{\pi \text{ radians}}{180^\circ} \\ = \frac{330\pi}{180} \text{ radians} \\ = \frac{11\pi}{6} \text{ radians}$$

$$20. \quad -270^\circ = -270^\circ \cdot \frac{\pi \text{ radians}}{180^\circ} \\ = -\frac{270\pi}{180} \text{ radians} \\ = -\frac{3\pi}{2} \text{ radians}$$

$$22. \quad \frac{\pi}{9} \text{ radians} = \frac{\pi \text{ radians}}{9} \cdot \frac{180^\circ}{\pi \text{ radians}} \\ = \frac{180^\circ}{9} = 20^\circ$$

$$24. \quad \frac{3\pi \text{ radians}}{4} \cdot \frac{180^\circ}{\pi \text{ radians}} = \frac{3 \cdot 180^\circ}{4} = 135^\circ$$

$$26. \quad \frac{11\pi \text{ radians}}{6} \cdot \frac{180^\circ}{\pi \text{ radians}} = \frac{11 \cdot 180^\circ}{6} = 330^\circ$$

$$28. \quad -4\pi \text{ radians} \cdot \frac{180^\circ}{\pi \text{ radians}} = -4 \cdot 180^\circ = -720^\circ$$

$$30. \quad 76^\circ = 76^\circ \cdot \frac{\pi \text{ radians}}{180^\circ} \\ = \frac{76\pi}{180} \text{ radians} \\ \approx 1.33 \text{ radians}$$

$$32. \quad -50^\circ = -50^\circ \cdot \frac{\pi \text{ radians}}{180^\circ} \\ = -\frac{50\pi}{180} \text{ radians} \\ \approx -0.87 \text{ radians}$$

$$34. \quad 250^\circ = 250^\circ \cdot \frac{\pi \text{ radians}}{180^\circ} \\ = \frac{250\pi}{180} \text{ radians} \\ \approx 4.36 \text{ radians}$$

$$36. \quad 3 \text{ radians} \cdot \frac{180^\circ}{\pi \text{ radians}} = \frac{3 \cdot 180^\circ}{\pi} \approx 171.89^\circ$$

$$38. \quad \frac{\pi}{17} \text{ radians} \cdot \frac{180^\circ}{\pi \text{ radians}} = \frac{180^\circ}{17} \approx 10.59^\circ$$

$$40. \quad -5.2 \text{ radians} \cdot \frac{180^\circ}{\pi \text{ radians}} = \frac{-5.2 \cdot 180^\circ}{\pi} \\ \approx -297.94^\circ$$

$$72. \quad r = 16 \text{ inches}, \theta = 60^\circ$$

Begin by converting 60° to radians, in order to use the formula $s = r\theta$.

$$60^\circ = 60^\circ \cdot \frac{\pi \text{ radians}}{180^\circ} = \frac{\pi}{3} \text{ radians}$$

Now use the formula $s = r\theta$.

$$s = r\theta = 16 \cdot \frac{\pi}{3} = \frac{16\pi}{3} \text{ inches} \approx 16.76 \text{ inches}$$

$$74. \quad r = 9 \text{ yards}, \theta = 315^\circ$$

Begin by converting 315° to radians, in order to use the formula $s = r\theta$.

$$315^\circ = 315^\circ \cdot \frac{\pi \text{ radians}}{180^\circ} = \frac{7\pi}{4} \text{ radians}$$

Now use the formula $s = r\theta$.

$$s = r\theta = 9 \cdot \frac{7\pi}{4} = \frac{63\pi}{4} \text{ yards} \approx 49.48 \text{ yards}$$

$$71. \quad r = 12 \text{ inches}, \theta = 45^\circ$$

Begin by converting 45° to radians, in order to use the formula $s = r\theta$.

$$45^\circ = 45^\circ \cdot \frac{\pi \text{ radians}}{180^\circ} = \frac{\pi}{4} \text{ radians}$$

Now use the formula $s = r\theta$.

$$s = r\theta = 12 \cdot \frac{\pi}{4} = 3\pi \text{ inches} \approx 9.42 \text{ inches}$$

$$73. \quad r = 8 \text{ feet}, \theta = 225^\circ$$

Begin by converting 225° to radians, in order to use the formula $s = r\theta$.

$$225^\circ = 225^\circ \cdot \frac{\pi \text{ radians}}{180^\circ} = \frac{5\pi}{4} \text{ radians}$$

Now use the formula $s = r\theta$.

$$s = r\theta = 8 \cdot \frac{5\pi}{4} = 10\pi \text{ feet} \approx 31.42 \text{ feet}$$