4.3 HW Answers

Monday, October 16, 2017 12:07 PM

4. $a^{2} + 15^{2} = 17^{2}$ $a^{2} = 289 - 225 = 64$ $a = \sqrt{64} = 8$ $\sin \theta = \frac{\text{opposite}}{\text{hypotenuse}} = \frac{8}{17}$ $\cos \theta = \frac{\text{adjacent}}{\text{hypotenuse}} = \frac{15}{17}$ $\tan \theta = \frac{\text{opposite}}{\text{adjacent}} = \frac{8}{15}$ $\csc \theta = \frac{\text{hypotenuse}}{\text{opposite}} = \frac{17}{8}$ $\sec \theta = \frac{\text{hypotenuse}}{\text{adjacent}} = \frac{17}{15}$ $\cot \theta = \frac{\text{adjacent}}{\text{opposite}} = \frac{15}{8}$ $9.) \frac{1}{2} \qquad 11 \qquad 52 \qquad 13 \qquad 53$ $15.) \qquad 17.) \frac{56 - 4}{4} \qquad 19 \qquad \frac{12 \cdot 53 + 56}{6}$

- **28.** $\cos\frac{3\pi}{8} = \sin\left(\frac{\pi}{2} \frac{3\pi}{8}\right) = \sin\left(\frac{4\pi}{8} \frac{3\pi}{8}\right) = \sin\frac{\pi}{8}$
- 31. $\cos 34^\circ = \frac{b}{220}$ $b = 220 \cos 34^\circ$ $b \approx 220(0.8290) \approx 182$ in.
- 33. $\sin 23^\circ = \frac{16}{c}$ $c = \frac{16}{\sin 23^\circ} \approx \frac{16}{0.3907} \approx 41 \text{ m}$

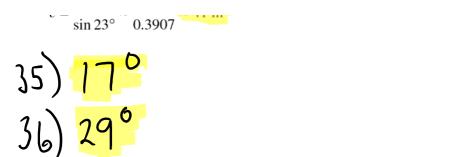
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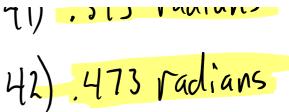
- 21. $\sin 7^\circ = \cos(90^\circ 7^\circ) = \cos 83^\circ$
- 22. $\sin 19^\circ = \cos(90^\circ 19^\circ) = \cos 71^\circ$
- **23.** $\csc 25^\circ = \sec(90^\circ 25^\circ) = \sec 65^\circ$
- 24. $\csc 35^\circ = \sec(90^\circ 35^\circ) = \sec 55^\circ$

25.
$$\tan \frac{\pi}{9} = \cot\left(\frac{\pi}{2} - \frac{\pi}{9}\right)$$
$$= \cot\left(\frac{9\pi}{18} - \frac{2\pi}{18}\right)$$
$$= \cot\frac{7\pi}{18}$$

26.
$$\tan \frac{\pi}{7} = \cot \left(\frac{\pi}{2} - \frac{\pi}{7} \right) = \cot \left(\frac{7\pi}{14} - \frac{2\pi}{14} \right) = \cot \frac{5\pi}{14}$$

27.
$$\cos\frac{2\pi}{5} = \sin\left(\frac{\pi}{2} - \frac{2\pi}{5}\right)$$
$$= \sin\left(\frac{5\pi}{10} - \frac{4\pi}{10}\right)$$
$$= \frac{\sin\frac{\pi}{10}}{10}$$





54.
$$\tan 40^\circ = \frac{h}{35}$$

 $h = 35 \tan 40^\circ$
 $h \approx 35(0.8391) \approx 29$
The tree's height is approximately 29 feet.

55.
$$\tan \theta = \frac{125}{172}$$

Use a calculator in degree mode to find θ .

| Many Scientific Calculators | Many Graphing Calculators |
|-----------------------------|---|
| $125 \div 172 = TAN^{-1}$ | $\boxed{\text{TAN}^{-1}} (125 \div 172) \text{ENTER}$ |

The display should show approximately 36. Thus, the angle of elevation of the sun is approximately 36°

57. $\sin 10^\circ = \frac{500}{c}$ $c = \frac{500}{\sin 10^\circ} \approx \frac{500}{0.1736} \approx 2880$

The plane has flown approximately 2880 feet.

58. $\sin 5^\circ = \frac{a}{5000}$

 $a = 5000 \sin 5^{\circ} \approx 5000(0.0872) = 436$

The driver's increase in altitude was approximately 436 feet.

$$59. \quad \cos\theta = \frac{60}{75}$$

Use a calculator in degree mode to find θ .

| Many Scientific Calculators | Many Graphing Calculators |
|-----------------------------|------------------------------|
| $60 \div 75 = COS^{-1}$ | COS^{-1} (60 ÷ 75) ENTER |

The display should show approximately 37. Thus, the angle between the wire and the pole is approximately 37°.