

F.TF.C.8: Determining Trigonometric Functions 1

- 1 Given $\cos \theta = \frac{7}{25}$, where θ is an angle in standard position terminating in quadrant IV, and $\sin^2 \theta + \cos^2 \theta = 1$, what is the value of $\tan \theta$?
 1) $-\frac{24}{25}$ 2) $-\frac{24}{7}$ 3) $\frac{24}{25}$ 4) $\frac{24}{7}$
- 2 Given $\sin \theta = \frac{7}{25}$ and θ terminates in quadrant II, what is the value of $\tan \theta$?
 1) $-\frac{7}{24}$ 2) $-\frac{24}{7}$ 3) $\frac{7}{24}$ 4) $\frac{24}{7}$
- 3 If $\cos \theta = -\frac{3}{4}$ and θ is in Quadrant III, then $\sin \theta$ is equivalent to
 1) $-\frac{\sqrt{7}}{4}$ 2) $\frac{\sqrt{7}}{4}$ 3) $-\frac{5}{4}$ 4) $\frac{5}{4}$
- 4 Given that $\sin^2 \theta + \cos^2 \theta = 1$ and $\sin \theta = -\frac{\sqrt{2}}{5}$, what is a possible value of $\cos \theta$?
 1) $\frac{5 + \sqrt{2}}{5}$ 2) $\frac{\sqrt{23}}{5}$ 3) $\frac{3\sqrt{3}}{5}$ 4) $\frac{\sqrt{35}}{5}$
- 5 If $\cos A = \frac{\sqrt{5}}{3}$ and $\tan A < 0$, what is the value of $\sin A$?
 1) $\frac{2}{3}$ 2) $-\frac{\sqrt{5}}{3}$ 3) $-\frac{2}{3}$ 4) $\frac{3}{\sqrt{5}}$
- 6 What is the value of $\tan \theta$ when $\sin \theta = \frac{2}{5}$ and θ is in quadrant II?
 1) $-\frac{\sqrt{21}}{5}$ 2) $-\frac{\sqrt{21}}{2}$ 3) $\frac{-2}{\sqrt{21}}$ 4) $\frac{2}{\sqrt{21}}$
- 7 Given $\tan \theta = -\frac{4}{3}$ where $\frac{\pi}{2} < \theta < \pi$, what is the value of $\sec \theta$?
 1) $-\frac{5}{3}$ 2) $-\frac{3}{5}$ 3) $\frac{4}{5}$ 4) $\frac{5}{3}$
- 8 Using the identity $\sin^2 \theta + \cos^2 \theta = 1$, find the value of $\tan \theta$, to the *nearest hundredth*, if $\cos \theta$ is -0.7 and θ is in Quadrant II.
- 9 Given $\cos \theta = -\frac{2}{7}$ with θ in Quadrant II, find the exact value of $\sin \theta$.
- 10 Given $\tan \theta = \frac{7}{24}$, and θ terminates in Quadrant III, determine the value of $\cos \theta$.
- 11 Given $\cos A = \frac{3}{\sqrt{10}}$ and $\cot A = -3$, determine the value of $\sin A$ in radical form.

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Answer Section

1 ANS: 2

$$\text{If } \cos \theta = \frac{7}{25}, \sin \theta = \pm \frac{24}{25}, \text{ and } \tan \theta = \frac{\sin \theta}{\cos \theta} = \frac{\pm \frac{24}{25}}{\frac{7}{25}} = \pm \frac{24}{7}$$

REF: 081811aaii

2 ANS: 1

$$\text{If } \sin \theta = \frac{7}{25}, \cos \theta = -\frac{24}{25} \text{ in QII, and } \tan \theta = \frac{\sin \theta}{\cos \theta} = \frac{\frac{7}{25}}{-\frac{24}{25}} = -\frac{7}{24}$$

REF: 062417aaii

3 ANS: 1

$$-\sqrt{1 - \left(-\frac{3}{4}\right)^2} = -\sqrt{\frac{16}{16} - \frac{9}{16}} = -\sqrt{\frac{7}{16}} = -\frac{\sqrt{7}}{4}$$

REF: 081905aaii

4 ANS: 2

$$\cos \theta = \pm \sqrt{1 - \left(\frac{-\sqrt{2}}{5}\right)^2} = \pm \sqrt{\frac{25}{25} - \frac{2}{25}} = \pm \frac{\sqrt{23}}{5}$$

REF: 061712aaii

5 ANS: 3

$$\sin^2 A + \left(\frac{\sqrt{5}}{3}\right)^2 = 1 \quad \text{Since } \tan A < 0, \sin A = -\frac{2}{3}$$

$$\sin^2 A + \frac{5}{9} = \frac{9}{9}$$

$$\sin^2 A = \frac{4}{9}$$

$$\sin A = \pm \frac{2}{3}$$

REF: 012320aaii

6 ANS: 3

$$\frac{-2}{\sqrt{5^2 - 2^2}} = \frac{-2}{\sqrt{21}}$$

REF: 082312aai

7 ANS: 1

$$\cos \theta = -\frac{3}{5}; \sec \theta = -\frac{5}{3}$$

REF: 012421aai

8 ANS:

$$\sin^2 \theta + (-0.7)^2 = 1 \quad \text{Since } \theta \text{ is in Quadrant II, } \sin \theta = \sqrt{.51} \text{ and } \tan \theta = \frac{\sin \theta}{\cos \theta} = \frac{\sqrt{.51}}{-0.7} \approx -1.02$$

$$\sin^2 \theta = .51$$

$$\sin \theta = \pm \sqrt{.51}$$

REF: 081628aai

9 ANS:

$$\left(-\frac{2}{7}\right)^2 + \sin^2 \theta = 1 \quad \frac{3\sqrt{5}}{7} \text{ as sin is positive in Quadrant II.}$$

$$\frac{4}{49} + \sin^2 \theta = \frac{49}{49}$$

$$\sin^2 \theta = \frac{45}{49}$$

$$\sin \theta = \pm \frac{3\sqrt{5}}{7}$$

REF: 012527aai

10 ANS:

$$\tan \theta = \frac{\sin \theta}{\cos \theta} = \frac{-7/25}{-24/25} \quad \cos \theta = \frac{-24}{25}$$

REF: 061928aai

11 ANS:

$$\cot A = \frac{\cos A}{\sin A}$$

$$-3 = \frac{\frac{3}{\sqrt{10}}}{\sin A}$$

$$\sin A = \frac{3}{-3\sqrt{10}} = -\frac{1}{\sqrt{10}}$$

REF: 082229a11