

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

- 1 Given  $\cos \theta = \frac{7}{25}$ , where  $\theta$  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  $\theta$  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  $\theta$  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  $\theta$  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  $\theta$  is in Quadrant II.

- 9 Given  $\cos \theta = -\frac{2}{7}$  with  $\theta$  in Quadrant II, find the exact value of  $\sin \theta$ .

- 10 Given  $\tan \theta = \frac{7}{24}$ , and  $\theta$  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.

**F.TF.C.8: Determining Trigonometric Functions 1****Answer Section**

1 ANS: 2

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

REF: 081811aii

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: 062417aii

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: 081905aii

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: 061712aii

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: 012320aii

6 ANS: 3

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

REF: 082312aii

7 ANS: 1

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

REF: 012421aii

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: 081628aii

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: 012527aii

10 ANS:

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

REF: 061928aii

11 ANS:

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

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

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

REF: 082229aii