PreCalculus 30   Practice Quiz Trigonometry

30.1v13lk	2	3	4
Outcome 4: Demonstrate understanding of trigonometry and the unit circle	I can convert between degrees and radians I can calculate: • all coterminal angles • arc length • solutions to basic trig equations Determine approximate values of trig ratios for any angle and exact values for 30^0, 45^0, 60^0 Apply properties of the unit circle to find unknown values I can solve trig equations using technology	I can solve trig equations, with and without using exact values I can write all six trig ratios given coordinates on terminal ray or θ. Solve basic situational questions	In addition to demonstrating level 3 performance, I am capable of in depth inferences and applications that go **beyond** what was taught in class

Level 2

1. Convert the following measures from degrees to radians. Leave answers in terms of π

    a) 60^0 b) -225^0

2. Convert the following measures from radians to degrees.

    a) $\dfrac{4\pi}{3}$ b)   2.7

3. Determine one positive and one negative coterminal angle for the following.

    a) 45^0 b) $\dfrac{\pi}{6}$

4. Find the missing coordinates for the following points on the unit circle.

a) $(x, \frac{-4}{3})$ in quadrant 4

b) $(\frac{2\sqrt{2}}{3}, y)$ in quadrant 4

5. Identify the angle for which the terminal arm intersects the unit circle at $(\frac{\sqrt{3}}{2}, -\frac{1}{2})$

6. Determine the exact roots for each trig equation over the specified domain.

a. $sin\theta = \frac{1}{2}$ $(0 \le \theta \le 2\pi)$

c. $tan\theta = \frac{-\sqrt{3}}{3}$ $(0 \le \theta \le 360^o)$

b. $cos\theta = \frac{-\sqrt{3}}{2}$ $(0 \le \theta \le 360^o)$

d. $sec\theta = \frac{2}{\sqrt{3}}$ $(0 \le \theta \le 2\pi)$

7. Solve the following equation using technology

   a) $\sin^2 x + \sin x = 3$ b) $3\sin x = \frac{1}{2}x^2$

8. Verify that $x = \frac{\pi}{3}$ is a root of the equation $\tan^2 x - 3 = 0$

9. Determine approximate values for:

a) $\tan 42^\circ$ b) $\csc 193^\circ$

10. If $\tan\theta = \frac{\sqrt{3}}{3}$ the solutions to θ are $\frac{\pi}{6}$ and $\frac{7\pi}{6}$ if the domain is $(0 \le \theta \le 2\pi)$. Write the general solution to each solution.

Level 3

11. Write the six trigonometric ratios in terms of x, y, and r if the point (-5, 12) is on the terminal arm of the angle. Leave answers in simplest radical form (no decimals).

12. Determine exact roots of each trig equation over the specified domain.

a) $\sqrt{2}\,sinx + 4 = 5$ $(0 \leq \theta \leq 2\pi)$

c) $2cos^2\theta - 7cos\theta + 3 = 0$ $(0 \leq \theta \leq 2\pi)$

d) $csc^2\theta - 1 = 0$ $(0 \leq \theta \leq 180^o)$

b) $sin^2\theta - sin\theta = 0$ $(0 \leq \theta \leq 2\pi)$

Level 4

13. If $\theta = \left\{\frac{\pi}{3}, \frac{5\pi}{3}\right\}$ write a cosine equation with the above solutions over the domain $(0 \le \theta \le 2\pi)$.

14. Explain why the equation $\sin^2 x - 5\sin x + 6 = 0$ has no solution.

15. Determine the solution set to each equation for $(0 \le \theta \le 2\pi)$.

$$\sin x \tan x - \sqrt{3} \sin x + \tan x - \sqrt{3} = 0$$