Precalculus Test 3 (4.4 – 4.5) Name _____
NO CALCULATORS ALLOWED!

I. Multiple Choice

_____ 1. If $\sin\theta < 0$ and $\tan\theta > 0$, then in which quadrant does θ lie?

(A) I (B) II (C) III (D) IV

_____ 2. Given an angle of 230˚, its reference angle is:

(A) 130˚ (B) 40˚ (C) 50˚ (D) 30˚ (E) None of these

_____ 3. The domain of $y = \sin(x)$ is:

(A) $-90^\circ \le x \le 90^\circ$ (B) $-\infty < x < +\infty$ (C) $-1 \le y \le 1$
(D) $0 \le y \le 180^\circ$ (E) None of these

_____ 4. The range of $y = \cos(x)$ is:

(A) $-90^\circ \le x \le 90^\circ$ (B) $-\infty < x < +\infty$ (C) $-1 \le y \le 1$
(D) $0 \le y \le 180^\circ$ (E) None of these

_____ 5. The exact value of $\csc\left(\frac{5\pi}{3}\right)$ is

(A) $\frac{-\sqrt{3}}{2}$ (B) $\frac{2\sqrt{3}}{3}$ (C) $-\frac{2\sqrt{3}}{3}$ (D) 2 (E) None of these

_____ 6. Given that $\sin\theta = -\frac{1}{5}$ and $\tan\theta < 0$, determine the value of $\cos\theta$.

(A) $-\frac{\sqrt{26}}{5}$ (B) $\frac{\sqrt{26}}{5}$ (C) $-\frac{2\sqrt{6}}{5}$ (D) $\frac{2\sqrt{6}}{5}$ (E) None of these

_____ 7. Determine the exact value of $\sin\left(\frac{7\pi}{6}\right)$

(A) $-\frac{1}{2}$ (B) $-\frac{\sqrt{3}}{2}$ (C) $\frac{\sqrt{3}}{2}$ (D) $\frac{\sqrt{2}}{2}$ (E) None of these

_____ 8. Determine the amplitude of $y = 3\sin(2x) + 4$

(A) 1 (B) 2 (C) 3 (D) 4 (E) None of these

II. Free Response – Show all work on your own paper.

9. Determine the *exact* values of the six trigonometric functions of an angle in standard position whose terminal side passes through the point (2, -3).

10. Determine two values of θ between 0˚ and 360˚ that satisfy the equation

$$\sin\theta = -\frac{\sqrt{3}}{2}$$

11. Determine two values of θ between 0 and 2π radians that satisfy the equation

$$\tan\theta = \sqrt{3}$$

12. Determine the (A) Amplitude, (B) Period, and (C) Horizontal Translation of
$y = 7 \sin(\theta + 30^\circ)$

<u>13 – 16.</u> Graph at least one cycle of each of the following:

13. $y = \cos\theta$

14. $y = 2 + 3\sin\theta$

15. $y = \sin(2\theta)$

16. $y = 1 + 3\cos 2(\theta - 40^\circ)$

EXTRA CREDIT: Graph at least one cycle of $y = -1 - 2\sin(2\theta + 100^\circ)$