Precalculus Midterm 2019 Exam Review #2 Questions Name _____

Complete the following problems on a separate sheet of paper

1. Evaluate $\sin\left(\arccos\frac{4}{\sqrt{35}}\right)$.

2. Find the point (x, y) on the unit circle which corresponds to the real number $t = -5\pi$.

3. Find $\sec\theta$ given that θ lies in quadrant III and $\tan\theta = 6$.

4. Find the six trig functions of the angle θ (in standard position) whose terminal side passes through $(4, -8)$.

5. Find the amplitude and period of $y = -6\cos\left(\frac{x}{3} + \pi\right) - 2$.

6. A ship is 45 miles east and 30 miles south of port. The captain wants to sail directly to port. What bearing should be taken?

7. Find one positive and one negative coterminal angle for $\frac{2\pi}{9}$

8. Find the reference angle for $\frac{17\pi}{3}$

9. Find the 5 remaining trigonometric functions (ratios) given $\tan\theta = -\frac{12}{5}$ and $\sin\theta > 0$.

10. A plane flies at a bearing of 197° after leaving an airport at noon at a speed of 350 miles per hour. How far south and how far west is it from its point of departure at 2:30 PM ?

11. Find the reference angle θ' for $\theta = \frac{7\pi}{5}$.

12. Evaluate $\csc 3.92$. Round to four decimal places.

13. Find the five remaining trig functions given $\cot\theta = -\frac{8}{15}$ and $\cos\theta < 0$.

14. Find the exact value of $\arccos\left(-\frac{\sqrt{2}}{2}\right)$.

15. Sketch one full period of $y = \tan\left(2x - \frac{\pi}{4}\right)$.

16. Sketch one full period of $f(x) = -\csc(x + \pi) + 1$.

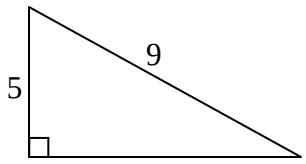
17. For the following, sketch the angle in standard position and determine one positive and one negative coterminal angle

a. $\frac{11\pi}{4}$ b. $-\frac{23\pi}{3}$ c. 405°

18. Find the point (x, y) on the unit circle which corresponds to the real number $t = -\frac{4\pi}{3}$.

19. Evaluate, if possible, the 6 trigonometric functions of the real number $t = 2\pi$

20. Find the exact values of all 6 trigonometric functions of the angle in the following right triangle:



21. A wire runs from the ground to the top of a 25-foot telephone pole. The angle formed between the wire and the ground is 52°. How far from the base of the pole is the wire attached to the ground?

22. Find the six trig functions of the angle θ (in standard position) whose terminal side passes through $(6, -8)$

23. Find the 5 remaining trigonometric functions (ratios) given $\csc\theta = \frac{3}{2}$ and $\cos\theta < 0$.

24. Sketch in standard position and find the reference angle for $-\frac{8\pi}{5}$

25. Evaluate sine, cosine, and tangent of $-\frac{5\pi}{4}$ without a calculator.

For # 26 & 27, find the amplitude, period, range, phase and vertical shifts where applicable. Then sketch one full period for each function. Identify all key elements.

26. $y = 8\cos\left(\frac{x}{4}\right) + 1$.

27. $y = 2\cot(2t)$.

28. Evaluate without a calculator:

a. $\arcsin\left(-\frac{1}{2}\right)$ b. $\cos^{-1}(0)$ c. $\arctan\left(\sqrt{3}\right)$

29. Find the exact value of the expression:

a. $\cos\left(\arctan\frac{3}{4}\right)$ b. $\cot\left(\arcsin\left(-\frac{12}{13}\right)\right)$