Acc GSE PreCalculus Name: _____

Graphing Trig Functions Unit Study Guide Date: _____ Per: _____

I. Evaluate. (Exact values)

1. $arcsin\left(\frac{1}{2}\right)$

2. $\arctan\left(\frac{\sqrt{3}}{3}\right)$

3. $arccos\left(-\frac{\sqrt{2}}{2}\right)$

II. Identify the amplitude, period, midline, and phase shift.

4. $y = cos(x - \pi)$

5. $y = -5cos\left(\frac{x}{4} - \pi\right) + 4$

6. $y = \frac{1}{2}sin\left(2x - \frac{\pi}{3}\right)$

7. $y = -3 + sin\left(3x + \frac{\pi}{2}\right)$

III. Graph the functions below. Identify the transformations.

8. $y = cos\left(2x - \frac{\pi}{2}\right)$

9. $y = 3sin(3x + \pi) - 5$

10. $y = -sin\left(2x - \frac{\pi}{3}\right)$

11. $y = -2cos(3x) + 4$

IV. Identify the domain, range, period, and asymptotes of each graph.

12. $y = cot\left(x + \frac{\pi}{2}\right)$

13. $y = -2csc(4x)$

14. $y = sec4x$

15. $y = 4cot(3x)$

16. $y = cot\left(\frac{x}{4}\right)$

V. Sketch the parent graphs of sine and cosine .

17. – 18.

VI. Write the equation of a cosine function with the following conditions.

19. amplitude = 2, period = $\frac{\pi}{2}$, phase shift = $-\frac{\pi}{4}$

20. period = 2π, phase shift = -1, vertical shift = -4

VII. Find two angles, θ, between $[0°,360°)$ that satisfy the given equation.

21. $cot\theta = -1.456$

22. $sin\theta = .9564$

23. $tan\theta = 0.3519$

24. $sec\theta = -2.6571$

VIII. Solve the word problems below.

25. A man that is 6 feet tall casts a shadow 14 feet long. Find the angle of elevation of the sun.

26. From a point on a cliff 75 feet above water level an observer can see a ship. Find the angle of depression to the ship if the ship is 400 feet from the base of the cliff.

27. A ladder is leaning against a wall. The base of the ladder is 5 feet from the wall and makes an angle of $39°$ with the ground. Find the length of the ladder.

28. Find the altitude of a scalene triangle if one of the base angles measures $70°$ and its adjacent side (not the base) is 9 cm.

29. The bearing of a buoy from a ship 8.7 miles away is $N64°E$. The ship is headed due north, and the navigator plans to change course when the buoy has a bearing of $S26°E$. How much farther will the ship travel before a change of course is required?

30. The navigator of a ship on a $N44°E$ sights a buoy with a bearing of $S46°E$. After the ship sails 15 km along the same course, the navigator sights the same buoy with a bearing $S12°E$. Find the distance between the ship and the buoy at the time of each sighting.

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IX. Evaluate.

31. $arcsin(sin3\pi)$

32. $cos\left(arccos\left(-\frac{\sqrt{3}}{2}\right)\right)$

33. $arctan\left(tan\left(\frac{11\pi}{6}\right)\right)$