Name:_____ Per:_____

Midterm Review!

Look at how much stuff you've learned so far this year! On this review you'll find some examples of the topics we've learned about. You do not need to work out every question on the review!!! Skip around and work the types of questions you've struggled with or don't remember. You also should look at your notes and old quizzes and tests to see what material you don't remember or struggled with. Questions marked with *** are questions you can use a calculator for. The test will be split into a non-calculator portion on Wednesday and a calculator portion on Thursday. If you are absent, you will need to arrange a time with your partner next week Monday or Tuesday to make up the portion you missed

Unit 1- Right Triangle Trig
Find coterminal angles
Graph angles in radians and degrees
Find radian values on the unit circle
Convert radians to degrees
Find reference angles
Exact values on the unit circle
***Trig in the real world

Unit 2- Trig Graphing
Graph sinusoidal functions
Know tan, cot, sec, csc parent functions
Write equations of sinusoids
***Model real world problem with sinusoidal functions

Unit 3- Inverses
Evaluate inverse values between [0, 2π)
Find general solutions to trig equations
Evaluate principal inverse values
Evaluate trig composition with exact values and variables
***Solve trig functions algebraically

Unit 1- Right Triangle Trig

1. Find 2 angles that are coterminal to $\frac{3\pi}{5}$ and 2 angles coterminal to 40^{o}

2. Convert 50^{0} degrees to radians

3. Convert $\frac{3\pi}{5}$ radians to degrees

Graph the angle and find it's reference angle

4. 600^{0}

5. $-\frac{18\pi}{7}$

Find the exact value

6. $\sin\frac{\pi}{3}$

7. $\cos\frac{3\pi}{4}$

8. $\cot\pi$

9. $\sec\frac{7\pi}{6}$

10. The terminal side of an angle θ in standard position passes through the point (5,2). Find the 6 trigonometric functions of θ

*****11.**

A wire 32 feet long is attached to the top of a flagpole 23 feet long. Approximately what is the measure of the angle the wire makes with the ground? Round your answer to the nearest tenth

*****12.**

When an 11 foot 11 inches tall tree casts a 10 inch long shadow, what is the angle of elevation of the sun?

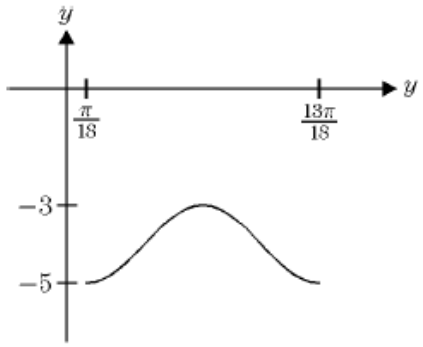
Unit 2- Graphing Trig Functions

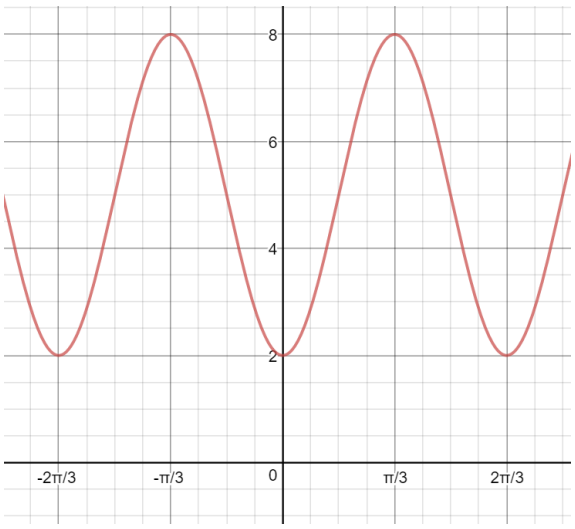
Graph 2 cycles of the function

13. $y = 4\sin\frac{\pi}{2}(x-2)-3$

14. $y = 4-6\cos 4\left(x-\frac{\pi}{8}\right)$

Write the equation of the graph





15. _____

16. _____

17. In the function $y = -4-3\sin 2\left(x-\frac{\pi}{3}\right)$, explain how the constants -4, -3, 2 and $\frac{\pi}{3}$ affect the graph

18. Know the parent functions for tan, cot, sec and csc!!!

***19.** Astronomers believe that the radius of a variable star increases and decreases with the brightness of the star. The certain variable star has an average radius of 25 million miles and changes by a maximum of 1.5 million miles from this average during a single pulsation. The time between periods of maximum brightness is 5.4 days. At the time you start recording, the star is at its average radius.

a) Find an equation that describes the radius (in millions of miles) of this star as a function of time in days.

b) What will be the first time the star will have a radius of 25.5 million miles?

c) What will the radius of the start be 12 days after you start recording?

Unit 3- Inverses

Find the values of x where $0 \le x < 2\pi$

20. $\cos^{-1}\frac{1}{\sqrt{2}} = x$

21. $\cot x = (-1)$

22. $\sec^{-1} -\frac{2}{\sqrt{3}} = x$

Find the general solution to the equation

23. $\cos x = \frac{\sqrt{3}}{2}$

24. $\sin x = 1$

Find the exact principle value

25. $\sin^{-1} -\frac{\sqrt{3}}{2}$

26. $\tan^{-1} 0$

Find the exact value or an equivalent algebraic expression

27. $\tan\left(\sin^{-1}\left(\frac{3}{5}\right)\right)$

28. $\sec\left(\cos^{-1}\left(-\frac{12}{13}\right)\right)$

29. $\sin^{-1}\left(\cos\left(\frac{3\pi}{4}\right)\right)$

30. $\tan^{-1}(\cos 0)$

31. $\sin(\cos^{-1} x)$

32. $\sin(\arctan 3x)$