

NAME: _____ Score _____ /100
 Please print

SHOW ALL YOUR WORK IN A NEAT AND ORGANIZED FASHION

Questions are each worth 4 points.

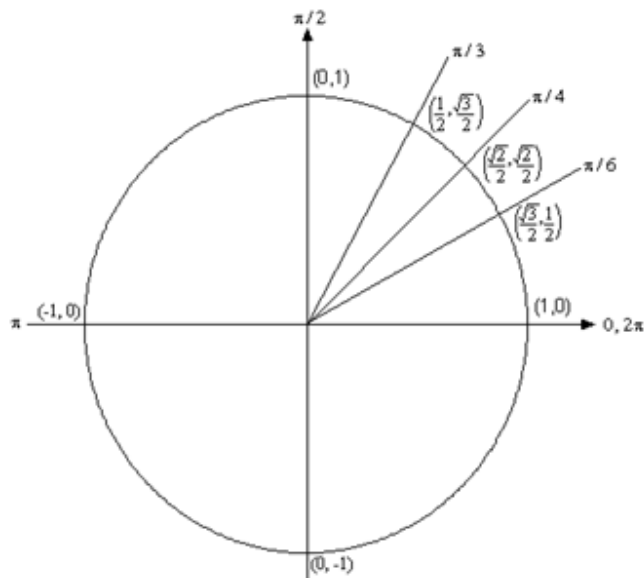
- $\sin\left(\frac{\pi}{6}\right) =$ _____
- What is the exact value of $\cos(150^\circ)$? _____

3. Circle those values in the following list which are zeros of the sin function.

$0, \frac{\pi}{4}, \frac{\pi}{2}, \frac{3\pi}{4}, \pi, \frac{5\pi}{4}, \frac{3\pi}{2}, 2\pi, \frac{5\pi}{2}$

4. Circle those values in the following list which are zeros of the cos function.

$0, \frac{\pi}{4}, \frac{\pi}{2}, \frac{3\pi}{4}, \pi, \frac{5\pi}{4}, \frac{3\pi}{2}, 2\pi, \frac{5\pi}{2}$



5. If $\sin(\theta) < 0$ and $\tan(\theta) < 0$, then θ is in Quadrant _____.

6. Find the exact value of $\tan(240^\circ)$. _____

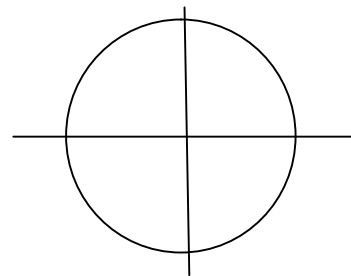
7. $\sin^{-1}(120^\circ)$ is _____.

8. In a right triangle with acute angles $\alpha = \frac{3\pi}{8}$ and β , the exact value of β is _____

9. What is the amplitude of the $3\sin(5x + \frac{\pi}{3})$? _____

10. If W is the wrapping function, $W\left(\frac{2\pi}{3}\right)$ is a point P on the unit circle.

Plot that point P on the unit circle at the right and label it with its coordinates.



For Problems 11 – 25, Show all necessary work. NO WORK – NO CREDIT
Sentences are good

11. In Figure 1 at the right, $b = 24$, $a = 45$, and $c = 51$. Calculate $\sin(\beta)$.
 Write your answer as a fraction reduced to lowest terms.

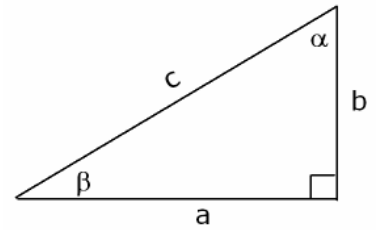
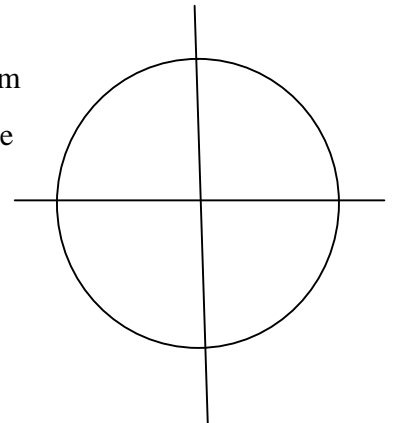


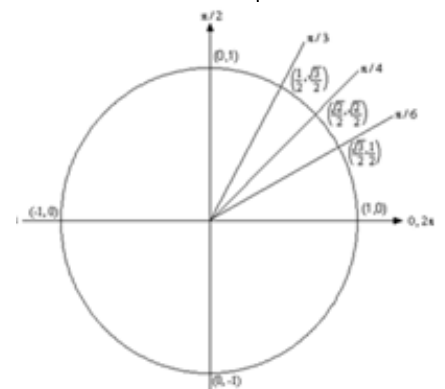
Figure 1

12. If a 20 foot ladder leans against a building such that it makes an angle of 65° with the ground, how high does the ladder reach on the building? Give your answer correct to the nearest foot. Draw a picture.

13. What is the reference angle α for the angle $\theta = -\frac{5\pi}{4}$? Draw a diagram on the unit circle at the right to illustrate both θ and α and the reference triangle.
 $\alpha =$



14. Find the smallest positive θ for which $\sin(\theta) = -\frac{\sqrt{3}}{2}$



15. Consider the function $f(x) = \frac{1}{2} \cos\left(\frac{1}{3}x - \frac{\pi}{6}\right)$

What is the phase shift? _____ What is the period? _____

Show work here:

phase shift is

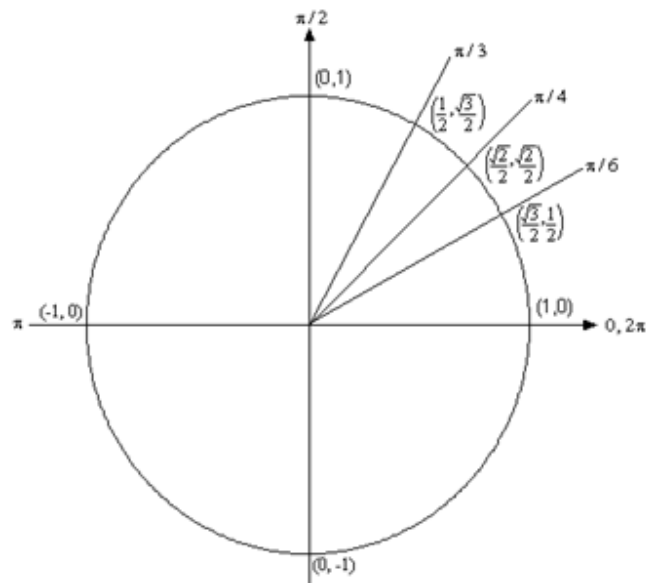
period is

16. If $\tan(\alpha) = \frac{4}{3}$ and α is an acute angle, what is the exact value, expressed as a fraction, of $\cos(\alpha)$?

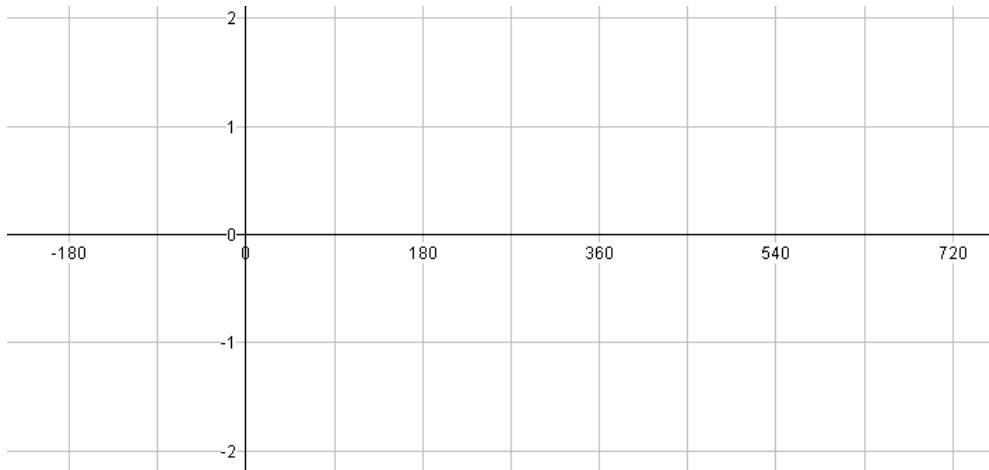
Hint: Draw the appropriate triangle.

17. Find the exact value of $\beta = \sin^{-1}\left(-\frac{\sqrt{2}}{2}\right)$.

Use the unit circle at the right to answer this question and illustrate your process – locate the angle β . Correlate β with one of the given angles.



18. Sketch the graph of $\sin(x)$ from -180° to 360°



19. Solve the triangle at the right if $\alpha = 35.73^\circ$ and $b = 6.48$
Your answers should be correct to two decimal places.

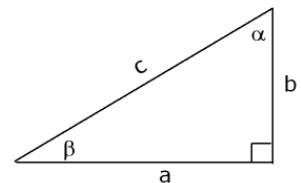
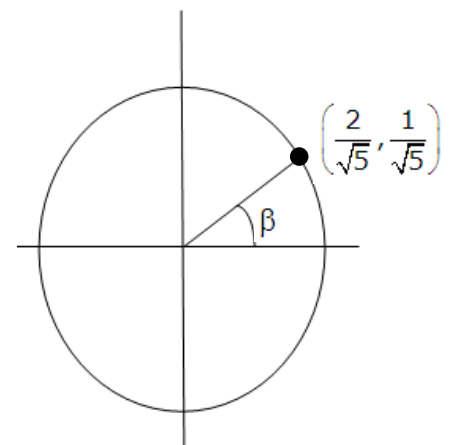


Figure 1

20. Refer to the diagram on the unit circle at the right. (Use a calculator)
Determine the measure of β in radians or degrees (your choice).
Your answer should be correct to two decimal places.
Label your answer as degree or radians.
Tell me the computations you did.



$\beta =$

21. What are (and why) the zeros of the function whose rule is $f(x) = \frac{x-5}{x+3}$

22. What are (and why) the vertical asymptotes for the function whose rule is $f(x) = \frac{3x^2 - 4x + 5}{2x^2 + 3x}$

23. What is (and why) the horizontal asymptote for the function whose rule is $f(x) = \frac{3x^2 - 4x + 5}{2x^2 + 3x}$

24. What is (and why) the slant asymptote for the function whose rule is $f(x) = \frac{3x^2 - 4x + 5}{x-1}$

25. What is (and why) the domain of the function whose rule is $f(x) = \frac{3x^2 - 4x + 5}{x-1}$