

1.12 Getting on the Right Wavelength

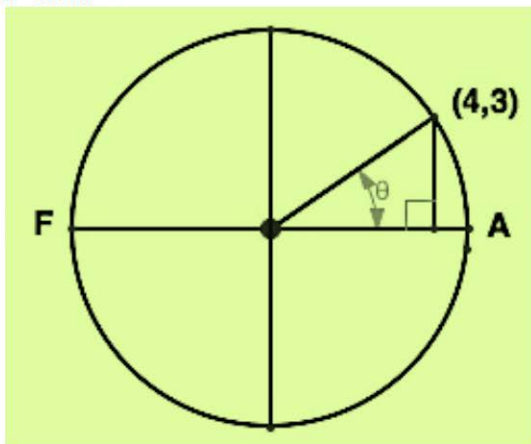
Practice

I. Using the definition of tangent

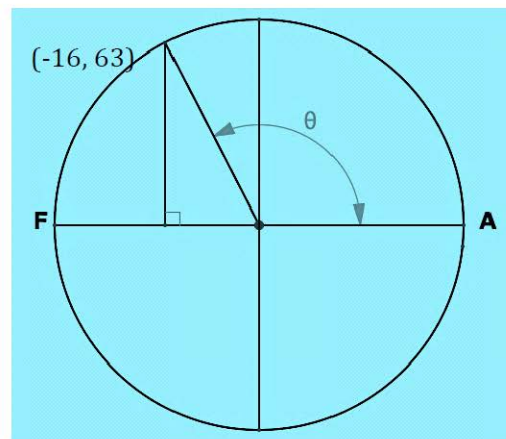
Use what you know about the definition of tangent in a right triangle to find the value of tangent θ for each of the right triangles below.



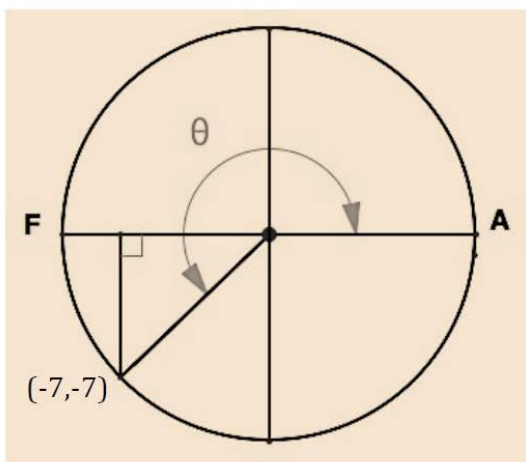
1. $\tan \theta =$



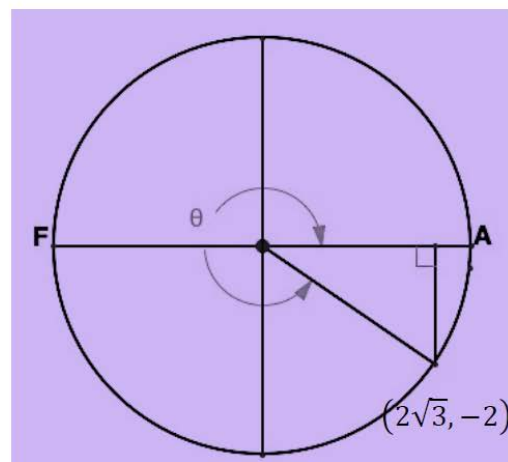
2. $\tan \theta =$



3. $\tan \theta =$



4. $\tan \theta =$



5. In each graph, the angle of rotation is indicated by an arc and θ . Describe the angles of rotation from 0 to 2π that make tangent θ be positive and the angles of rotation that make tangent θ be negative.

II. Transformations of Trig Graphs

Match each trigonometric representation on the left with an equivalent representation on the right. Then check your answers with a graphing calculator.

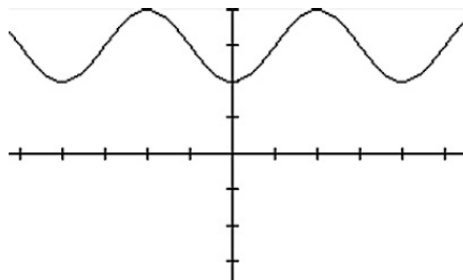
6. $y = -3\sin\left(\theta + \frac{\pi}{2}\right)$

A. $y = -3\sin\theta$

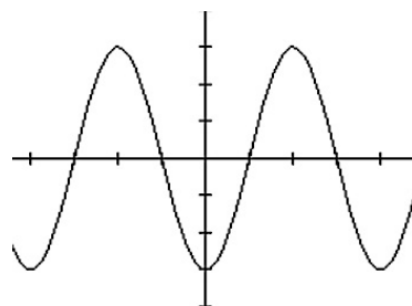
7. $y = 3\cos\left(\theta + \frac{\pi}{2}\right)$

B. $y = -\sin\theta$

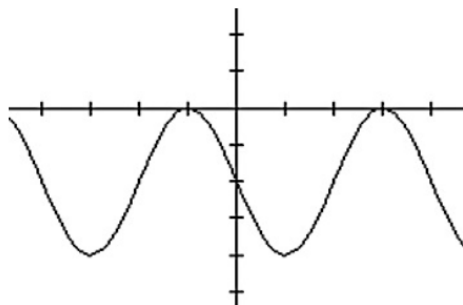
8.



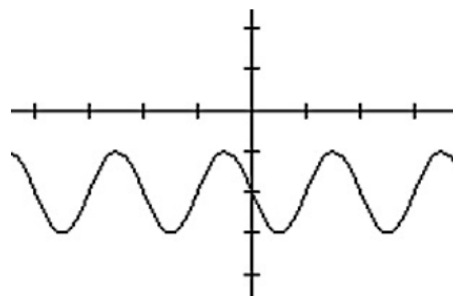
C.



9.



D.



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

E. $y = 2\cos\left(\theta + \frac{\pi}{2}\right) - 2$

11. $y = \sin(x + \pi)$

F. $y = \cos(x + \pi) + 3$

12. Choose the equation(s) that has the same graph as $y = \cos x$.

a) $y = \cos(\theta + \pi)$

b) $y = \cos(\theta - \pi)$

Use the unit circle to explain why they are the same.

13. Choose the equation(s) that has the same graph as $y = \sin x$.

a) $y = \sin(\theta + \pi)$

b) $y = \sin(\theta - \pi)$

Use the unit circle to explain why they are the same.

14. Why is the average value of a trigonometric function the same as the vertical shift?

15. Where do we see the average value of a trigonometric function in the graph?

16. Why is the average value of a trigonometric function important?

For each function, identify the amplitude, period, horizontal shift, vertical shift, and the endpoints of the primary interval.

17. $f(t) = 150 \cos\left(\frac{\pi}{6}(t - 8)\right) + 80$

amplitude:

period:

horizontal shift:

vertical shift:

end points:

18. $f(t) = 4.5 \sin\left(\frac{\pi}{4}t + \frac{3}{4}\right) + 8$

amplitude:

period:

horizontal shift:

vertical shift:

end points: