

Bring this worksheet to class completed fully on Friday, January 19, 2018.

Credit given for work shown.

No calculators needed.

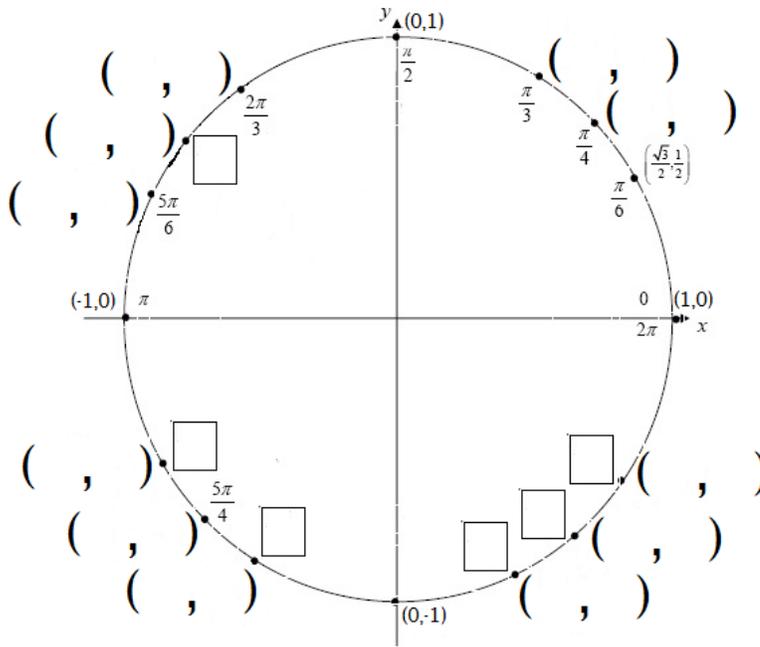
This is prerequisite material that you should have seen before. If you need a quick refresher, you can reference the textbook on pages 23-29. You may also use a precalculus book or the internet.

1. Convert the following angles to degrees or radians. Give exact answers.

(a) $4\pi/5 =$ _____ degrees

(b) $195^\circ =$ _____ radians.

2. Label all missing angles in radians and corresponding coordinates of the unit circle.



3. Find all solutions of the equations on the domain $[0, 2\pi]$.

a) $\sin(\theta) = \frac{1}{2}$

b) $\tan(\theta) = -1$

c) $\cos(\theta) = -1$

4. Express the following in terms of $\sin(\theta)$ and $\cos(\theta)$:

$\tan(\theta) =$

$\sec(\theta) =$

$\cot(\theta) =$

$\csc(\theta) =$

5. Let $\tan(\theta) = -2$ and $\sec(\theta) = \sqrt{5}$.

(a) What quadrant is θ in? _____

(d) $\cot(\theta) =$ _____

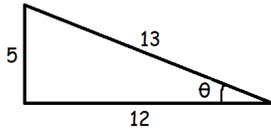
(b) $\sin(\theta) =$ _____

(c) $\cos(\theta) =$ _____

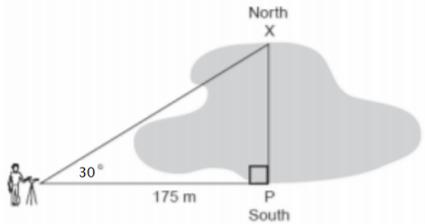
(e) $\csc(\theta) =$ _____

Useful identities: $\cos(x + y) = \cos x \cos y - \sin x \sin y$ $\sin(x + y) = \sin x \cos y + \cos x \sin y$

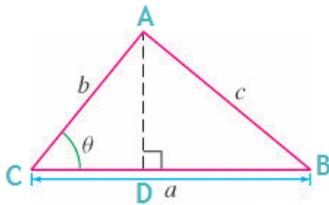
6. Use the addition formula (above) and the triangle (below) to compute $\cos\left(\frac{2\pi}{3} + \theta\right)$ exactly.



7. A surveyor needs to determine the distance across the pond shown in the diagram. She determines that the distance from her position to point P on the south shore of the pond is 175 meters and the angle from her position to point X on the north shore is 30° . Determine the distance, PX , across the pond.



8. Determine the height of the triangle in terms of b and θ . Use this value to determine the area of the triangle in terms of a , b and θ .



9. A surveyor is mapping a triangular plot of land. He measures two of the sides and finds that the lengths are 400 yards and 200 yards and the included angle is 60° .

What is the area of this plot of land?