

1. You should be able to solve a given system of equation.

a) Solve the system:

$$\begin{cases} x = 2 \\ x + y = 15 \end{cases}$$

b) Solve the system:

$$\begin{cases} x = -2 \\ x + y = 10 \end{cases}$$

c) Solve the system:

$$\begin{cases} x = 7 \\ x + y = 25 \end{cases}$$

d) Solve the system:

$$\begin{cases} x = 0 \\ x + y = -8 \end{cases}$$

2. You should be able to create and solve a system of equations from a word problem.

a) Two angles are supplementary. The measure of one angle is  $18^\circ$  more than the measure of the other angle. Find the measure of the smaller angle.

*[Solution: The smaller angle is  $81^\circ$ ]*

b) The total cost of two items is \$22. One item costs \$4 more than the other. How much does the cheaper item cost?

*[Solution: The cheaper item costs \$9.]*

c) The sum of two people's ages is 30 years. One person is 6 years older than the other. How old is the younger person?

*[Solution: The younger person is 12 years old.]*

3. You should be able to evaluate inverse trigonometric functions.

a) Evaluate  $\sin^{-1}\left(\frac{\sqrt{3}}{2}\right)$

c) Evaluate  $\tan^{-1}(\sqrt{3})$

b) Evaluate  $\cos^{-1}(0)$

d) Evaluate  $\tan^{-1}(-1)$

e) Evaluate the expression

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

g) Evaluate the expression

$$\tan\left(\cos^{-1}\left(\frac{\sqrt{2}}{2}\right)\right)$$

f) Evaluate the expression

$$\tan^{-1}\left(\sin\left(\frac{\pi}{6}\right)\right)$$

h) Evaluate the expression

$$\cos\left(\sin^{-1}\left(\frac{\sqrt{3}}{2}\right)\right)$$

4. You should be able to find the solution of the trigonometric equation.

a) Find the general solution:

$$\tan(\theta) = \sqrt{3}$$

b) Find the general solution:

$$\cos(\theta) = \frac{\sqrt{2}}{2}$$

c) Find the general solution:

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

d) Find the general solution for the given equation:

$$\sec(x) - \frac{1}{2} = 0$$

e) Find the general solution for the given equation:

$$\csc(x) - \frac{1}{2} = 0$$

k) Find all solutions on  $[0, 2\pi)$

$$3\cos^2(x) - 1 = 2\cos(x)$$

m) Find all solutions on  $[0, 2\pi)$

$$\cos^2(x)(\cos(x) + 1) + \sin^2(x)(\cos(x) + 1) = 0$$

n) Find all solutions on  $[0, 2\pi)$

$$\cos^2(x)(\sin(x) - 1) + \sin^2(x)(\sin(x) - 1) = 0$$

f) Find the general solution for the given equation:

$$\csc(x) - \frac{2}{\sqrt{3}} = 0$$

g) Find the general solution for the given equation:

$$\cot(x) - 1 = 0$$

h) Find all solutions on  $[0, 2\pi)$

$$2\sin\left(\frac{x}{5}\right) = \sqrt{2}$$

i) Find all solutions on  $[0, 2\pi)$

$$2\cos\left(\frac{x}{4}\right) = \sqrt{3}$$

j) Find all solutions on  $[0, 2\pi)$

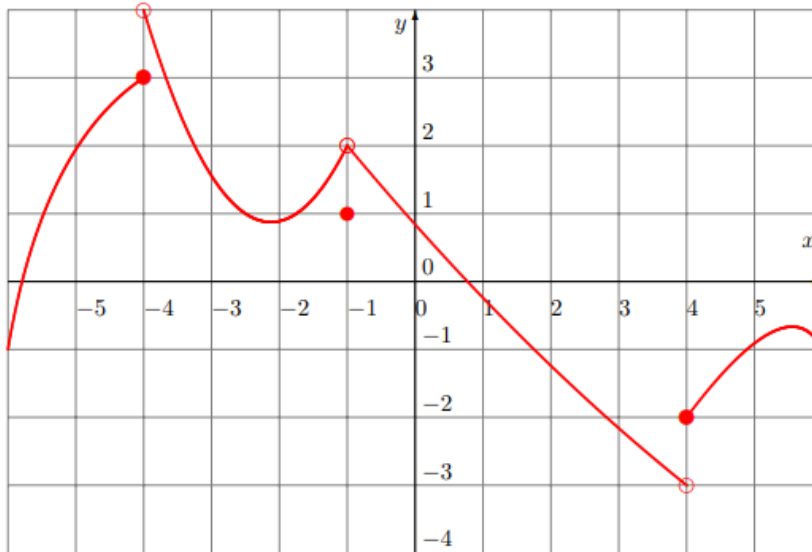
$$3\tan\left(\frac{x}{2}\right) = 3$$

l) Find all solutions on  $[0, 2\pi)$

$$4\cos^2(x) = 2\cos(x)$$

5. You should be able to solve word problems that have trigonometric functions.
- A 24-ft ladder leans against a building so that the angle between the ladder and the ground is  $60^\circ$ . How high does the ladder reach up the side of the building?  
[Solution: 20.8 feet]
  - A person is standing 25 ft away from the base of a flagpole. The angle of elevation from the ground to the top of the flagpole is  $40^\circ$ . How tall is the flagpole?  
[Solution: 21 feet]
  - A tree casts a shadow that is 18 ft long. The angle of elevation of the sun is  $35^\circ$ . How tall is the tree?  
[Solution: 12.6 feet]

6. Given a graph, you should be able to determine the given limit
- From the graph of  $f$  below, determine



i.  $\lim_{x \rightarrow -4^-} f(x)$

v.  $\lim_{x \rightarrow -1^-} f(x)$

ix.  $\lim_{x \rightarrow 4^-} f(x)$

ii.  $\lim_{x \rightarrow -4^+} f(x)$

vi.  $\lim_{x \rightarrow -1^+} f(x)$

x.  $\lim_{x \rightarrow 4^+} f(x)$

iii.  $\lim_{x \rightarrow -4} f(x)$

vii.  $\lim_{x \rightarrow -1} f(x)$

xi.  $\lim_{x \rightarrow 4} f(x)$

iv.  $f(-4)$

viii.  $f(-1)$

xii.  $f(4)$

7. Given a table of numerical values, you should be able to determine the limit of a function.

a) Use the table to estimate  $\lim_{x \rightarrow 2} f(x)$

x	1.9	1.99	1.999	2	2.001	2.01	2.1
f(x)	4.61	4.960	4.996	-----	5.004	5.040	5.41

b) Use the table to estimate  $\lim_{x \rightarrow 0} f(x)$

x	-0.1	-0.01	-0.001	0	0.001	0.01	0.1
f(x)	0.9983	0.99998	1.0000	-----	1.0000	0.99998	0.9983

c) Use the table to estimate  $\lim_{x \rightarrow 3} f(x)$

x	2.9	2.99	2.999	3	3.001	3.01	3.1
f(x)	6.800	6.980	6.998	-----	8.001	8.010	8.100

d) Use the table to estimate  $\lim_{x \rightarrow 0} f(x)$

x	-0.1	-0.01	-0.001	0	0.001	0.01
f(x)	-100.000	-10000.000	-1000000.000	-----	1000000.000	10000.000

8. You should be able to determine equivalent points in the polar coordinate system.

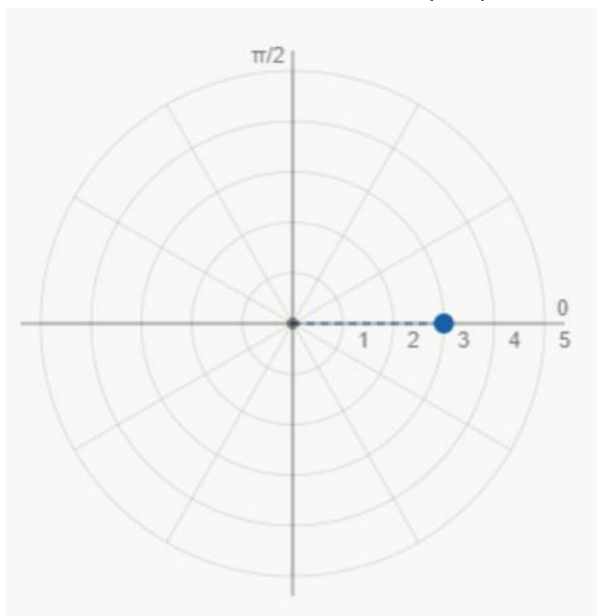
a) Which point  $(r, \theta)$  is equivalent to the point  $(r, \theta) = (2, \pi)$ ?

b) Which point  $(r, \theta)$  is equivalent to the point  $(r, \theta) = \left(4, \frac{\pi}{2}\right)$ ?

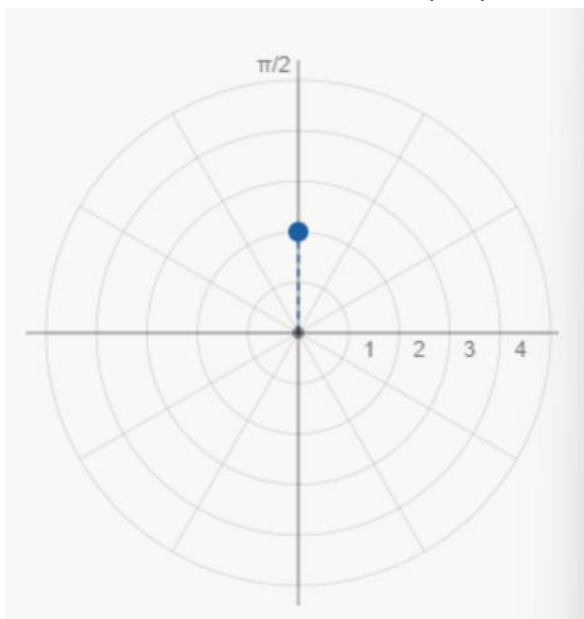
c) Which point  $(r, \theta)$  is equivalent to the point  $(r, \theta) = \left(5, \frac{5\pi}{6}\right)$ ?

d) Which point  $(r, \theta)$  is equivalent to the point  $(r, \theta) = \left(6, \frac{7\pi}{3}\right)$ ?

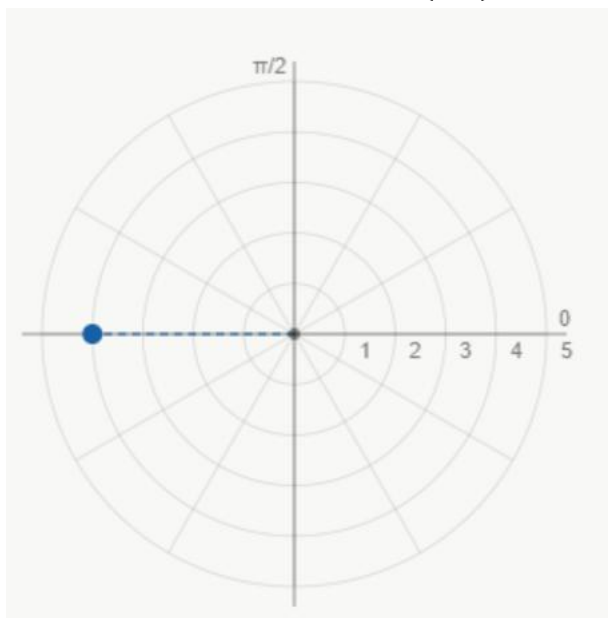
9. Given a polar coordinate plot, you should be able to determine the point marked.  
a) Choose the polar coordinates  $(r, \theta)$  that could represent the plotted point.



- b) Choose the polar coordinates  $(r, \theta)$  that could represent the plotted point.



c) Choose the polar coordinates  $(r, \theta)$  that could represent the plotted point.



d) Choose the polar coordinates  $(r, \theta)$  that could represent the plotted point.

