Lesson 5: Parabolas and Circles

Question #1

Reference Q.11012

Graph the following quadratic function and state the key features:

$y = -12x^2$

Question #2

Reference Q.11013

Graph the following quadratic function and state the key features:

$y = x^2 - 3.$

Question #3

Reference Q.11015

Graph the following quadratic function and state the key features:

$y = (x - 2)^2 + 2.$

Question #4

Reference Q.11016

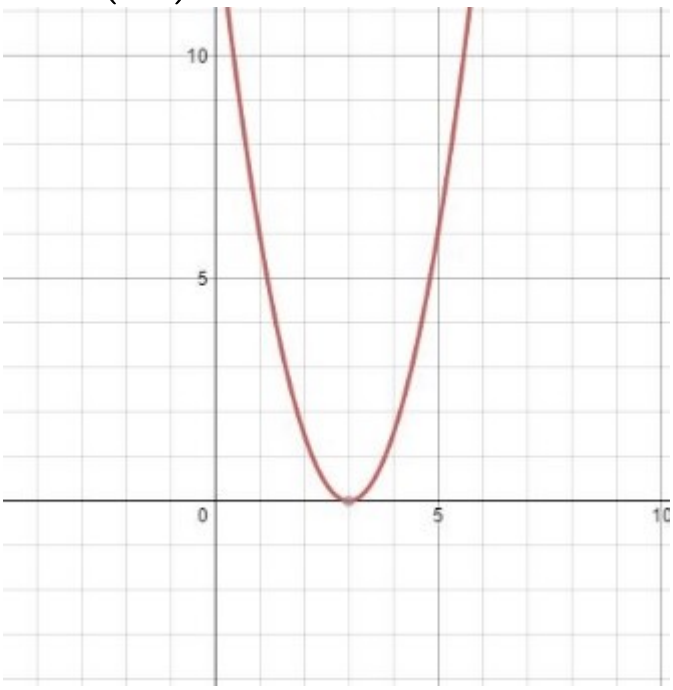
Graph the following quadratic function and state the key features:

$y = 3(x - 2)^2 - 5.$

Question #5

Reference Q.11019

Write the equation of a parabola with vertex $(3, 0)$ that goes through the point $\left(0, \frac{27}{2}\right)$ and state the key features.



Question #6

Reference Q.13703

Describe how the graphs of the following functions relate to the graph of $y = x^2$.

a. $y = (x + 5)^2$

b. $y = x^2 - 7$

c. $y - 8 = x^2$

d. $y = 5 + (x - 2)^2$

e. $y + 7 = (x + 1)^2 - 10$

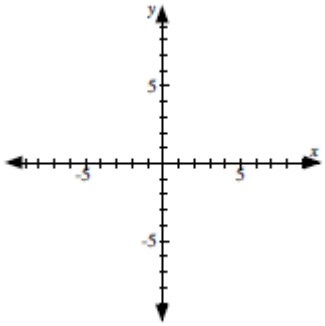
f. $y = (x - a)^2 - b$

Question #7

Reference Q.13704

Consider the graph of the function $f(x) = (x - 2)^2 + 3$

a. Sketch the graph on the grid.



b. State the coordinate of the vertex.

c. State the maximum or minimum value of the function.

d. State the domain and range of the function.

Question #8

Reference Q.17841

Circles are one type of a family of conics. Explain how to create a circle using a cone.

Question #9

Reference Q.17842

a. What is the standard equation of a circle and what information can we obtain from it?

b. What is the general equation of a circle and what information can we obtain from it?

Question #10

Reference Q.17843

Given $x^2 + y^2 = 36$, find the following:

a. Center of the circle

b. Radius of the circle

Question #11

Reference Q.17844

Given $(x-5)^2 + (y-2)^2 = 9$, find the following:

a. Center of the circle

b. Radius of the circle

Question #12

Reference Q.17845

Given $(x-4)^2 + (y+9)^2 = 100$, find the following:

a. Center of the circle

b. Radius of the circle

Question #13

Reference Q.17846

Change to general form: $(x+2)^2 + (y-1)^2 = 20$

Question #14

Reference Q.17847

Change to general form: $(x-12)^2 + (y+4)^2 = \sqrt{3}$ and determine the values of A, B, C, D and E.

Question #15

Reference Q.17851

a. Find the standard equation of a circle with radius of 5 and the center located at the origin.

b. Draw a graph of the above circle.

Question #16

Reference Q.17852

a. Find the standard equation of a circle with radius of 1 and the center located at the point $(2, 3)$.

b. Draw a graph of the above circle.

Question #17

Reference Q.17853

a. Find the standard equation of the circle given that the center is at the point $(-3, 1)$ and the circle passes through the point $(1, 4)$.

b. Graph the circle.

Question #18

Reference Q.17854

a. Find the standard equation of the circle given that the center is at the point $(-4, -5)$ and the circle passes through the point $(-2, -3)$.

b. Graph the circle.

Question #19

Reference Q.17855

a. Find the standard equation of the circle with diameter endpoints located at $(-1, -1)$ and $(3, -7)$.

b. Graph the circle.

Question #20

Reference Q.17856

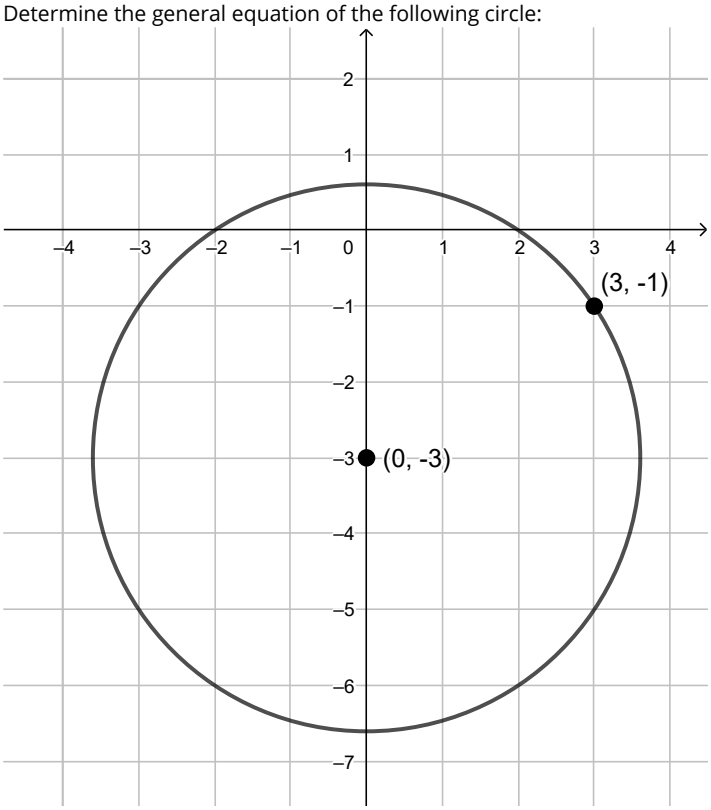
a. Find the standard equation of the circle with diameter endpoints located at $(3, 2)$ and $(5, -4)$.

b. Graph the circle.

Question #21

Reference Q.17857

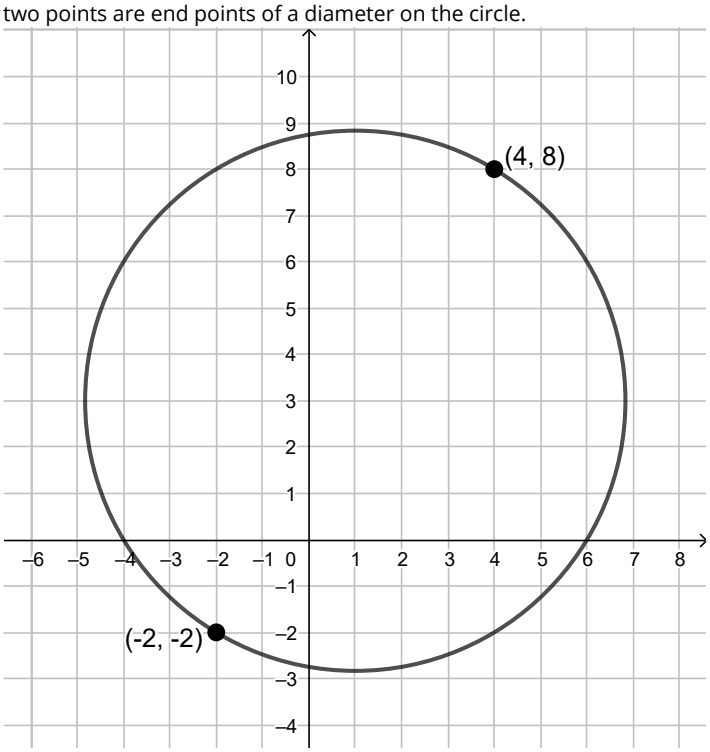
Determine the general equation of the following circle:



Question #22

Reference Q.17858

Determine the general equation of the following circle given that the two points are end points of a diameter on the circle.



Question #23

Reference Q.17859

Two nearby stars are mapped on a grid at the points $(-4, 0)$ and $(1, 0)$. Planets, each circling one of the stars, can be described using the equations $(x + 4)^2 + y^2 = 9$ and $(x - 1)^2 + y^2 = 4$. Will the orbits of these planets ever overlap one another? [Related note: In times past, First Peoples astronomers used their knowledge of the stars to help inform their practice and understanding of community. Awareness of planets and stars is found in many cultures and religious backgrounds.]