

## Lines

Perpendicular to the line  $y = 3x - 4$ ; containing the point  $(2, 4)$ .

Find also the intercepts of both equation. Graph both lines on the same coordinate axis.

Use mathematica to graph both lines. Answer all the questions above via paper.

---

Consider the following equation.  $x + 4y = 5$

(a) Rewrite the equation in slope-intercept form.

(b) Given  $x = -7$ , find the value for  $y$  and graph.

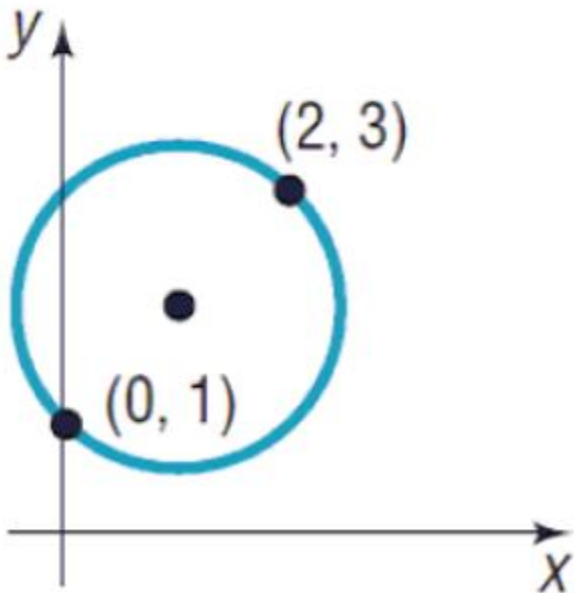
(c) Given  $x = -3$ , find the value for  $y$  and use the points to complete the graph of the line.

Answer all the questions above via paper. Use mathematica to graph

---

## Circles

Find the center and radius of the given circle. Write the standard form of the equation of the circle.



Use mathematica to graph. And on paper answer the above question.

---

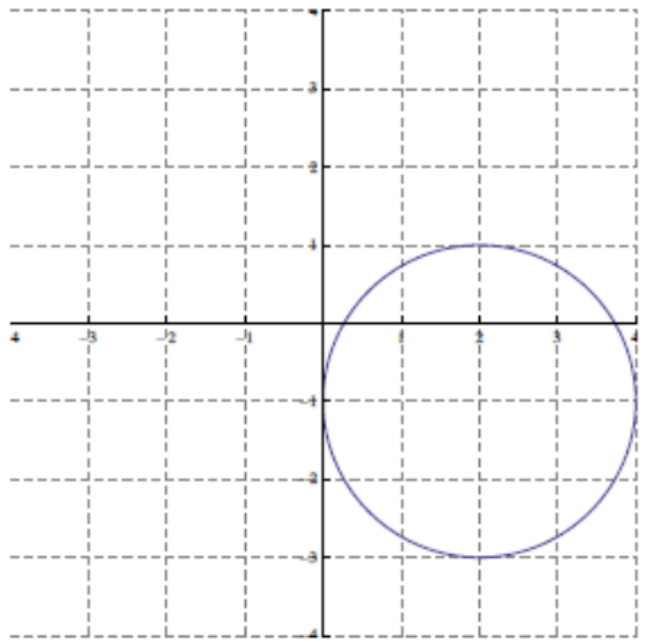
Find the standard form of the equation for the circle with radius 3 and center  $(3, 1)$

Use mathematica to graph. And on paper answer the above question.

Consider the circle pictured below.

- Find the center  $(h, k)$ , and radius,  $r$  of this circle.
- Write the equation of the circle in standard form.
- Find the intercepts.

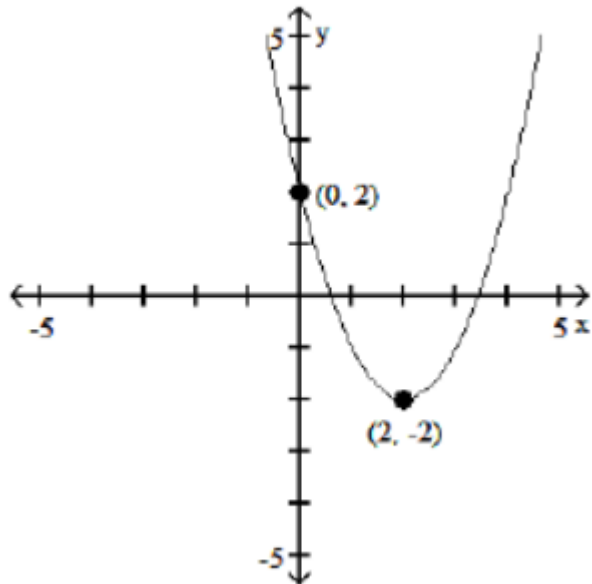
Use mathematica to graph. And on paper answer the above question.



## Functions

Determine the quadratic function whose graph is given.

Use mathematica to graph. And on paper answer the above question.



Consider the following quadratic function.  $k(x) = (x - 2)^2 - 9$

- Determine the  $x$ -intercept(s), if any, and the  $y$ -intercepts of this function as ordered pair(s).
- Determine the vertex and the axis of symmetry.
- Graph this quadratic function by identifying two other points on the parabola.

Use mathematica to graph. And on paper answer the above question.

Determine the equation of the quadratic function whose vertex is  $(-1, 4)$  and the  $y$ -intercept is  $-3$ .

Use mathematica to graph. And on paper answer the above question.

Determine the domain and range of the function defined as  $g(x) = \sqrt{x+7}$ . Express your answer in interval notation.

Use mathematica to graph. And on paper answer the above question.

$$y = e^x + 1$$

$$y = (x - 3)^5 + 5$$

$$y = (x-5)^2 + 6$$

$$y = -(x+5)^2 + 6$$

$$y = \frac{1}{x+2}$$

$$y = e^x + 2$$

$$y = |x+3| - 5$$

$$y = |x-3| - 5$$

$$y = \frac{1}{x+2} + 2$$

Give each graph for the above using mathematica and answer domain and range for each on paper.

---

Negate the list to the left over the x axis.

- 1)  $-(x-3)^2 - 3$
- 2)  $(x+4)^3 - 4$
- 3)  $\sqrt{(x-3)} + 4$
- 4)  $-(x-2)^2 + 2$
- 5)  $(x-3)^3 + 3$
- 6)  $\sqrt[3]{(x+5)} + 6$
- 7)  $|x-6| + 5$
- 8)  $\sqrt[3]{(x-4)} + 6$
- 9)  $\sqrt{(x+6)} + 4$
- 10)  $(x+9)^3 - 3$
- 11)  $(x-8)^2 + 2$
- 12)  $\sqrt[3]{(x+3)} - 6$
- 13)  $\sqrt{(x-6)} + 7$
- 14)  $-(x-6)^2 + 7$
- 15)  $-(x+7)^3 - 6$

Graph all of the above using mathematica.