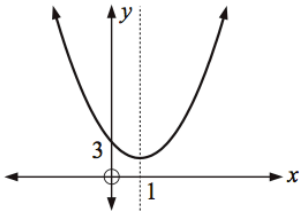
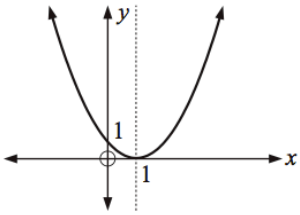
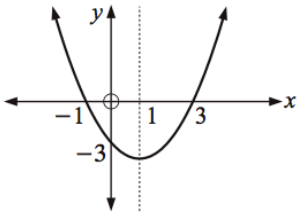
Discriminant Rules Reminder

$y = x^2 - 2x + 3$	$y = x^2 - 2x + 1$	$y = x^2 - 2x - 3$
		
$\Delta = b^2 - 4ac$ $= (-2)^2 - 4(1)(3)$ $= -8$	$\Delta = b^2 - 4ac$ $= (-2)^2 - 4(1)(1)$ $= 0$	$\Delta = b^2 - 4ac$ $= (-2)^2 - 4(1)(-3)$ $= 16$
$\Delta < 0$	$\Delta = 0$	$\Delta > 0$
does not cut the x-axis	touches the x-axis	cuts the x-axis twice
no real roots	one real root, one repeated root	two real roots, two solutions

For what value(s) of p does the equation $x^2 + px + 1 = 0$ have

(a) no real solutions (b) one real solution (c) two real solutions.

$-2 < p < 2$ $p = \pm 2$ $p < -2$ or $p > 2$

Find the values of m for which the quadratic $x^2 + 2x + m = 0$ has

(a) one real solution (b) two real solutions (c) no real solutions.

$m = 1$ $m < 1$ $m > 1$

Find the values of m for which the quadratic $x^2 + mx + 2 = 0$ has

(a) one real solution (b) two real solutions (c) no real solutions.

$m = \pm\sqrt{8}$ $m < -\sqrt{8}$ or $m > \sqrt{8}$ $-\sqrt{8} < m < \sqrt{8}$

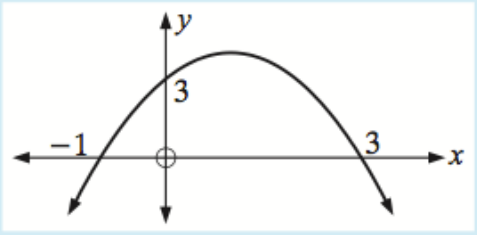
Find the values of k for which the quadratic $2x^2 + kx + 9 = 0$ has

(a) one real solution (b) two real solutions (c) no real solutions.

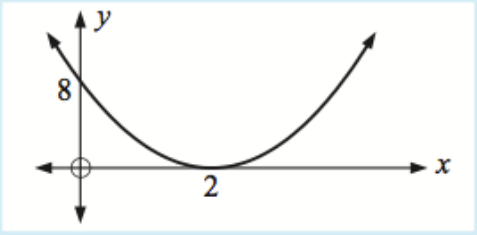
$k = \pm\sqrt{72}$ $k < -\sqrt{72}$ or $k > \sqrt{72}$ $-\sqrt{72} < k < \sqrt{72}$

Find the equation of the quadratic with graph:

a



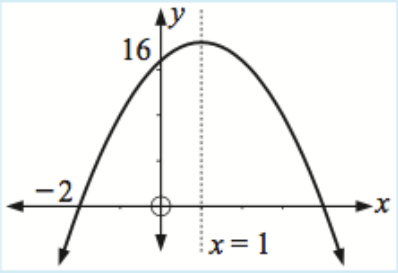
b



$y = -(x+1)(x-3)$

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

Find the equation of the quadratic with graph:



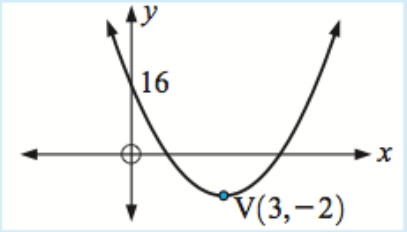
$y = -2(x+2)(x-4)$

Find, in the form $y = ax^2 + bx + c$, the equation of the quadratic whose graph cuts the x-axis at 4 and -3 and passes through the point $(2, -20)$.

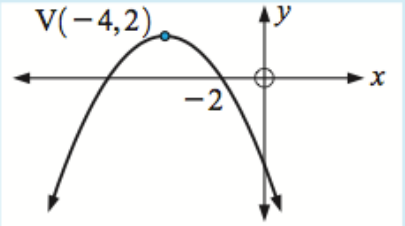
$y = 2x^2 - 2x - 24$

Find the equation of the quadratic given its graph is:

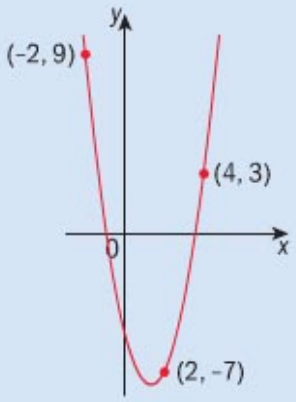
a



b



Write the equation of the quadratic function shown in the graph.



$y = \frac{3}{2}x^2 - 4x - 5$

1. Write three standard form equations with a, b, and c still unknown

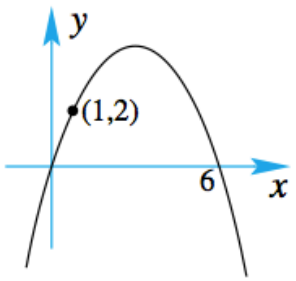
2. Use PolySmlt2 app on your GDC to solve for a, b, and c

3. Write the equation in standard form

$y = ax^2 + bx + c$

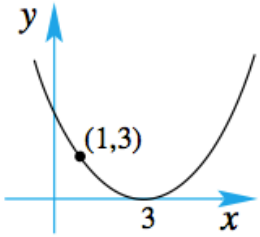
Find the equation of the quadratic function with graph

(a)



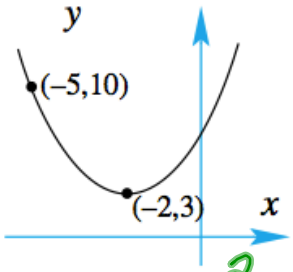
$y = -\frac{2}{5}x(x-6)$

(b)



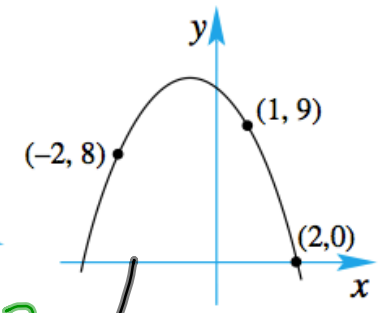
$y = \frac{3}{4}(x-3)^2$

(c)



$y = \frac{7}{9}(x+2)^2+3$

(d)

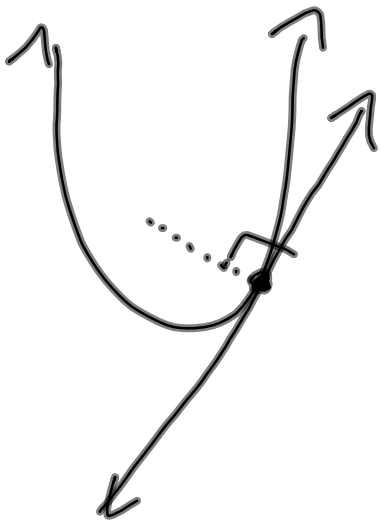


$y = -\frac{7}{3}x^2 - 2x + \frac{40}{3}$

Find the coordinates of the points of intersection of the graphs with equations $y = x^2 - x - 18$ and $y = x - 3$.

Find the points of intersection of $y = x^2 - 3x$ and $y = 3x^2 - 5x - 24$.

$y = 2x + k$ is a tangent to $y = 2x^2 - 3x + 4$. Find k.



$2x + k = 2x^2 - 3x + 4$

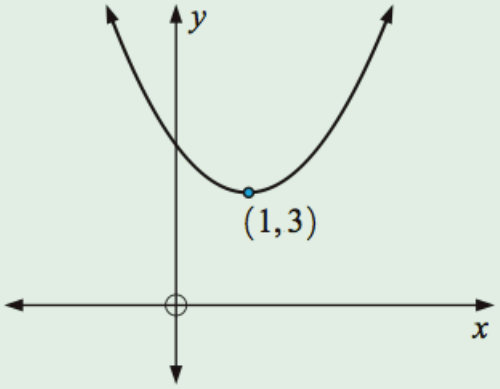
$-2x \quad -k$

$0 = 2x^2 - 5x + 4 - k$

$\Delta = 0$

$25 - 4(2)(4-k) = 0$

The diagram shows a quadratic $f(x) = x^2 + mx + n$.



a Determine the values of m and n.

b Find k given that the graph passes through the point $(3, k)$.

c State the vertex of $y = g(x)$ given $g(x) = f(x - 1) + 2$.

d Find the domain and range of $f(x)$ and $g(x)$.

Homework

Chapter 2.4: 2J #1-8

Need Extra Practice?

Chapter 6 E: 1, 5, 6, 8