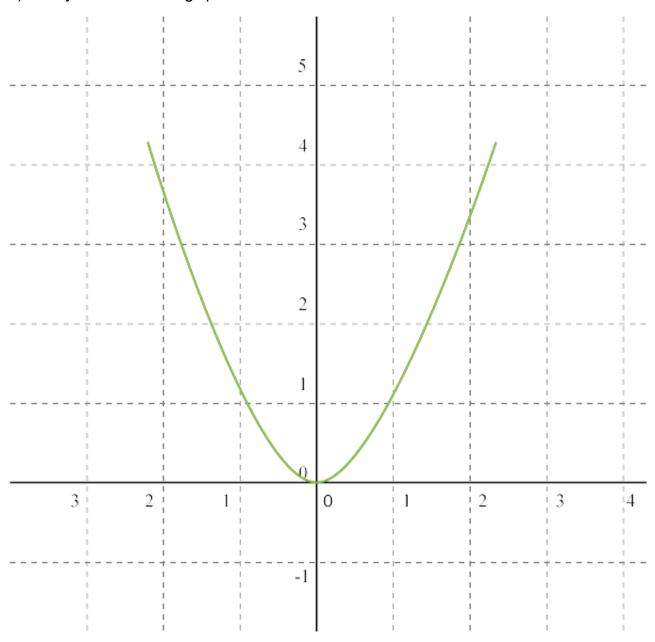
Ninth Grade - Quadratic Functions

1) Identify the vertex of the graph. Tell whether it is a minimum or maximum.

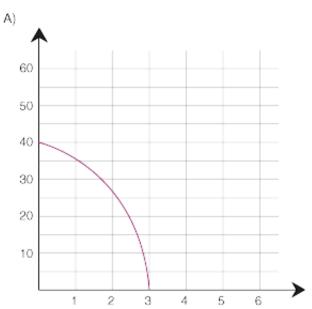


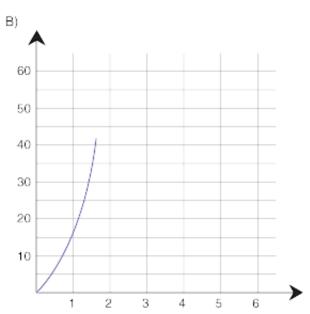
- (0, 1) maximum
- (0, 0) maximum
- (0, 0) minimum
- (0, 1) minimum

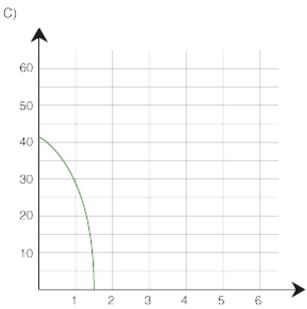
2) Which of the quadratic functions has the narrowest graph?

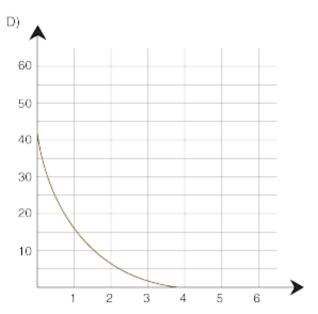
- $y = 1/7x^2$
- $y = -3x^2$
- y = 1/3x
- $y = -4x^2$

3) If an object is dropped from a height of 39 feet, the function $h(t) = ?16t^2 + 39$ gives the height of the object after t seconds. Graph the function.





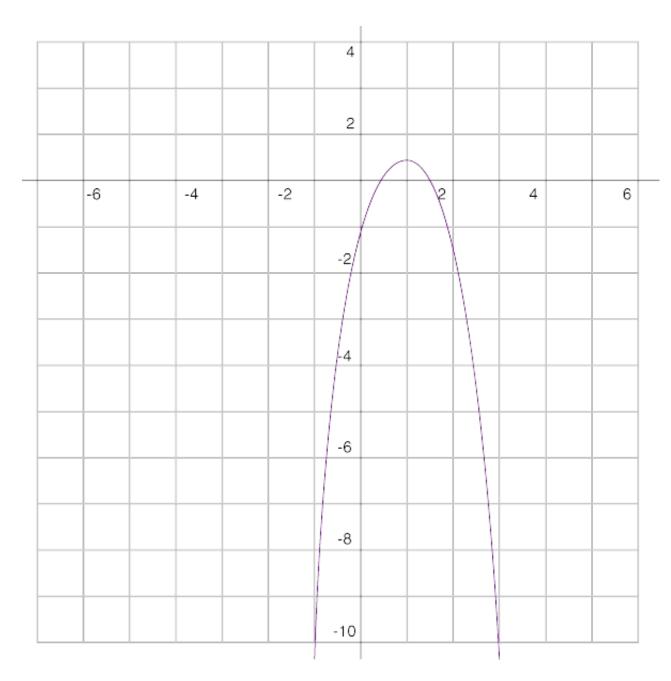




- a
- b
- d
- 0

- 4) A ball is thrown into the air with an upward velocity of 48 ft/s. Its height h in feet after t seconds is given by the function $h = ?16t^2 + 48t + 8$. In how many seconds does the ball reach its maximum height? Round to the nearest hundredth if necessary. What is the ball's maximum height?
 - 1.5 secs, 44 ft
 - 1.5 secs, 116 ft
 - 1.5 secs, 56 ft
 - 3 secs, 8 ft
- 5) Solve the equation: $x^2 15 = 34$
 - ±49
 - ±7
 - No real number solutions
 - 7
- 6) Solve (x 8)(4x + 2) = 0 using the Zero Product Property.
 - x = -8, -1/2
 - x = 8, 1/2
 - x = 8, -1/2
 - x = -8, 1/2
- 7) Solve the equation by factoring: z^2 ? 4z? 12 = 0
 - z = -6, 2
 - z = 6, 2
 - z = -6, -2
 - z = 6,-2

- 8) Solve the equation by completing the square: $x^2 + 2x 6 = 0$
 - 1.86, 3.86
 - -8,6
 - -1.65, -3.65
 - 2.24, 2.65
- 9) Use the Quadratic Formula to solve the following equations. $2a^2 46a + 252 = 0$
 - 18, 28
 - - 9, 14
 - 9, 14
 - - 18, 28
- 10) Use the Quadratic Formula to solve the following equations. $x^2 + 6x + 18 = 0$
 - -3 ± 3.3
 - -3 ±?-3
 - No solution
 - 0,-6
- 11) A rocket is launched from a top of 56-foot cliff with an initial velocity of 135 ft/s. Substitute the values into the vertical motion formula $h = -16t^2 + vt + c$. Let h = 0. Use the quadratic formula find out how long the rocket will take to hit the ground after it is launched. Round to the nearest tenth of a second.
 - $0 = -16t^2 + 56t + 135$; 8.8 s
 - 4.8 s
 - $0 = -16t^2 + 56t + 135$; 0.4 s
 - $0 = -16t^2 + 135t + 56$; 4.8 s
- 12) For which discriminant is the graph possible?



- None of these
- $b^2 4ac = 0$
- $b^2 4ac = -9$
- $b^2 4ac = 4$
- 13) Find the number of real solutions for the following equations. $x^2 12x + 36 = 0$
 - 1
 - 0
 - 2
 - None of these

- 14) Find the number of real solutions for the following equations. $x^2 5 = 0$
 - 0
 - 20
 - 1
 - · None of these
- 15) Use the following functions to answer the questions: f(x) = 3x ? 2, $g(x) = 3x^2 + 2x ? 1$, h(x) = 4x + 8 and $k(x) = 2x^2 x ? 9$. Find (f/h)when x = 2.
 - 1
 - 4
 - 2
 - 1/4
- 16) Use the following functions to answer the questions : f(x) = 3x 2, $g(x) = 3x^2 + 2x 1$, h(x) = 4x + 8 and $k(x) = 2x^2 x 9.17$. Find $f(x) \times h(x)$.
 - 12x² 16
 - $12x^2 + 32x + 16$
 - $12x^2 + 32x 16$
 - 12x² + 16x 16
- 17) Use the following functions to answer the next set of questions: f(x) = 3x 2, $g(x) = 3x^2 + 2x 1$, h(x) = 4x + 8 and $k(x) = 2x^2 x 9$. Find g(x) + k(x).
 - $-5x^2 x + 10$
 - $-x^2 3x 8$
 - $5x^2 + x 10$
 - $x^2 + 3x + 8$

18) Use the following functions to answer the next set of questions: f(x) = 3x ? 2, $g(x) = 3x^2 + 2x ? 1$, h(x) = 4x + 8 and $k(x) = 2x^2 - x ? 9$. Find (g - k)(3)

- 24
- 38
- 26
- 86

19) Find the equation of the axis of symmetry and the coordinates of the vertex of the graph of $y = 4x^2 + 5x - 1$

- x = -5/8, Vertex: (5/8, -41/16)
- x = 5/8, Vertex: (5/8, 37/8)
- x = 5/8, Vertex: (5/8, 59/16)
- x = -5/8, Vertex : (-5/8, -91/16)

20) Suppose you have 56 feet of fencing to enclose a rectangular dog pen. The function $A = 28x - x^2$, where x = width, gives you the area of the dog pen in square feet. What width gives you the maximum area? What is the maximum area? Round to the nearest tenth as necessary.

- Width = 28ft; Area = 196ft²
- Width = 14ft; Area = 196ft²
- Width = 14ft; Area = 588ft²
- Width = 28ft; Area = 420ft²

21) Solve the equation: $x^2 + 20 = 4$

- 24
- ± 24
- -4
- No real number solutions

22) Find the zeros of the function $h(x) = x^2 - 15x + 50$ by factoring

- x = 2 or 25
- x = 10 or 5
- x = -10 or -5
- x = -2 or 25
- 23) Find the vertex of the graph of the quadratic function: $y = x^2 3$
 - (-3,0)
 - (3,0)
 - (0,3)
 - (0,-3)
- 24) Identify the vertex of the quadratic function: $f(x) = (x 4)^2 5$
 - (0,4)
 - (4,-5)
 - (-5,4)
 - (-5,0)
- 25) Find the equation of the quadratic function that has the given vertex and given point on its graph. Vertex: (-4,-4) point: (-3,-5)
 - $P(x) = x^2 + 8x 4$
 - $P(x) = x^2 + 8x + 4$
 - $P(x) = -x^2 + 4x 4$
 - $P(x) = -x^2 8x 20$
- 26) Find the equation of the axis of symmetry of the quadratic function: $y = (x + 1)^2 + 8$
 - y = 0
 - y = -1
 - x = -1
 - x =1

- 27) Find the maximum or minimum point of the function $f(x) = x^2 + 14x + 40$ and state whether it is a maximum or minimum
 - (-7,-9); minimum
 - (-9,0); minimum
 - (-9,-7); maximum
 - (0,-7); maximum
- 28) Solve the equation $10z^2 + 3z 3 = 0$

a)
$$\frac{-3 \pm \sqrt{129}}{20}$$
 b) $\frac{-5 \pm \sqrt{149}}{10}$ c) $\frac{-2 \pm \sqrt{139}}{30}$ d) $\frac{-4 \pm \sqrt{124}}{24}$

- a
- b
- d
- C
- 29) Evaluate the discriminant, and predict the type and number of solutions of $s^2 + 3s + 8 = 0$
 - 0, one rational
 - 23, two different irrational
 - -23, two different imaginary
 - 23, two different rational
- 30) Write a quadratic equation in the form $ax^2 + bx + c = 0$ that has the solutions(roots)5, and -3
 - $x^2 15x 2 = 0$
 - $x^2 + 2x 15 = 0$
 - $x^2 15x + 2 = 0$
 - $x^2 2x 15 = 0$