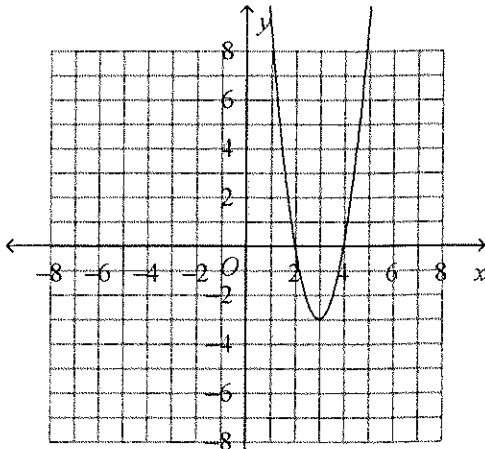


ALGEBRA 2 - 5.1 to 5.3 Quadratic Equations & Quadratic Functions REVIEW

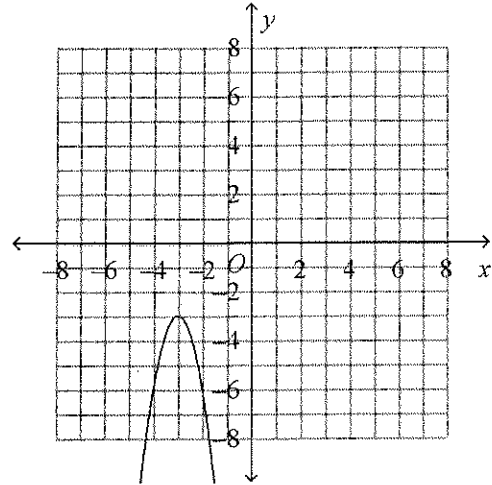
Multiple Choice

_____ 1) Which is the graph of $y = -3(x - 3)^2 - 3$?

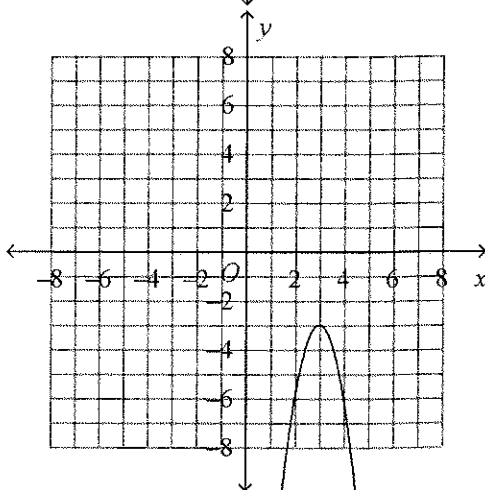
a)



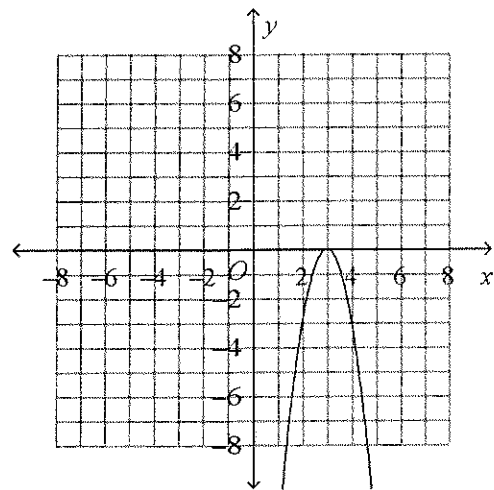
c)



b)



d)



_____ 2) Identify the vertex and the y-intercept of the graph of the function $y = 3(x + 2)^2 - 5$.

a) vertex: $(-2, -5)$;
y-intercept: 7

c) vertex: $(2, -5)$;
y-intercept: 7

b) vertex: $(2, 5)$;
y-intercept: 12

d) vertex: $(-2, 5)$;
y-intercept: -1

_____ 3) Find the zeros of the function $h(x) = x^2 - 15x + 50$ by factoring.

a) $x = 2$ or $x = 25$
b) $x = 10$ or $x = 5$

c) $x = -10$ or $x = -5$
d) $x = -2$ or $x = -25$

_____ 4) Find the roots of the equation $24x - 36 = 4x^2$ by factoring.

a) $x = 3$

b) $x = -9$

c) $x = 9$

d) $x = -3$

Write the equation of the parabola in vertex form.

_____ 5) vertex $(-2, 4)$, point $(2, 84)$

a) $y = 5(x - 2)^2 + 4$

b) $y = 84(x + 2)^2 - 4$

c) $y = 5(x + 2)^2 + 4$

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

_____ 6) vertex $(0, 3)$, point $(-1, 5)$

a) $y = 5x^2 - 3$

b) $y = 2x^2 - 3$

c) $y = -x^2 + 3$

d) $y = 2x^2 + 3$

_____ 7) Find the minimum or maximum value of $f(x) = x^2 + x + 10$. Then state the domain and range of the function.

a) The minimum value is 9.75. D: {all real numbers}; R: $\{y \mid y \geq 9.75\}$

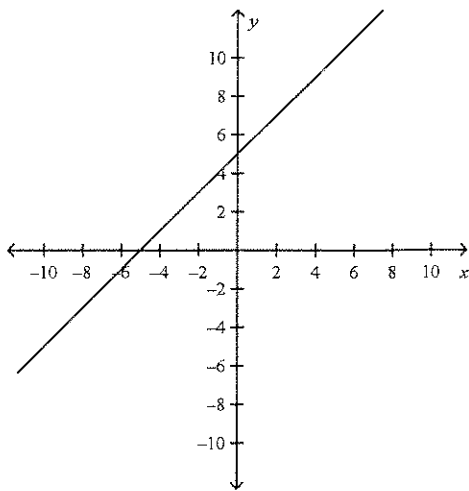
b) The minimum value is 9.75. D: $\{x \mid x \geq 9.75\}$; R: {all real numbers}

c) The maximum value is -0.5 . D: {all real numbers}; R: $\{y \mid y \geq 9.75\}$

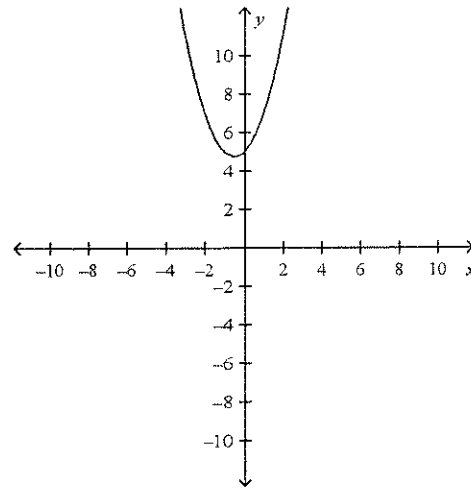
d) The maximum value is -0.5 . D: $\{x \mid x \geq 9.75\}$; R: {all real numbers}

_____ 8) Graph $f(x) = x^2 + x + 5$ by using a table.

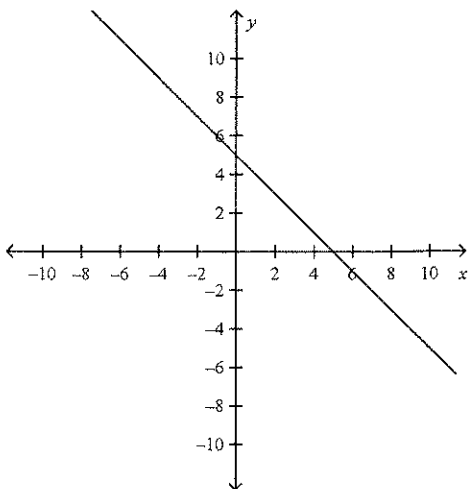
a)



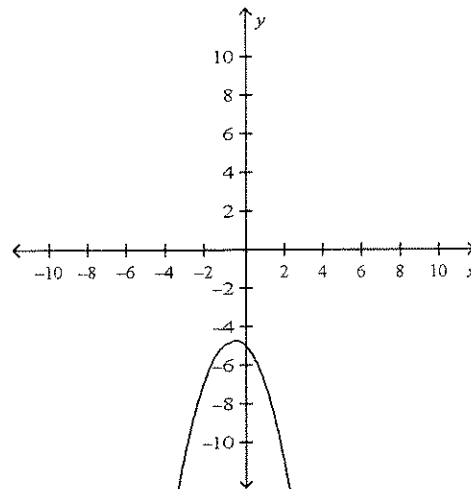
c)



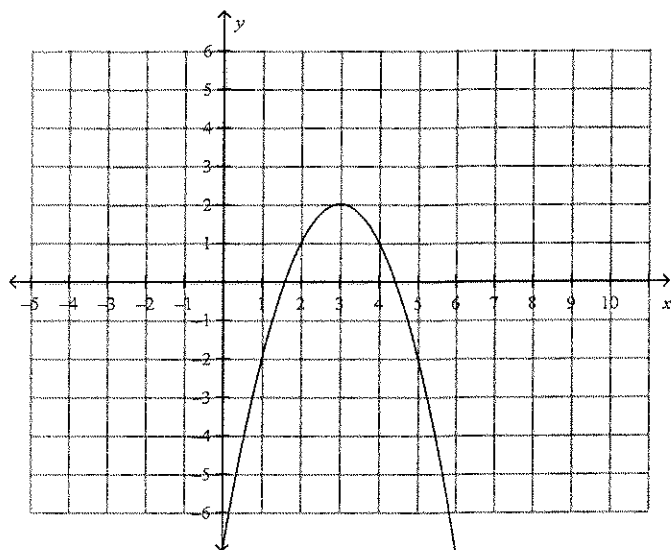
b)



d)

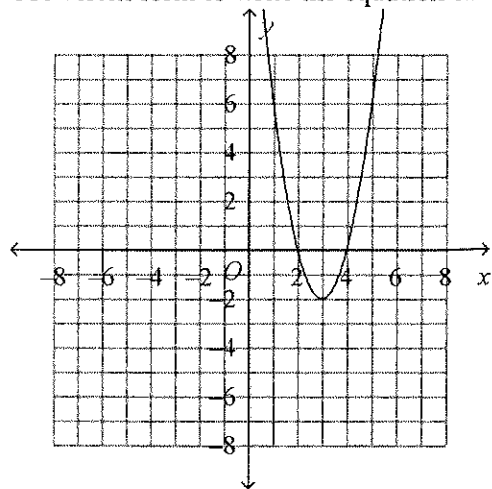


_____ 9) Which quadratic function does the graph represent?



- a) $f(x) = -x^2 + 6x + 7$ c) $f(x) = -x^2 + 6x - 7$
 b) $f(x) = x^2 + 6x - 7$ d) $f(x) = -x^2 - 6x - 7$

_____ 10) Use vertex form to write the equation of the parabola.



- a) $y = 2(x - 3)^2 - 2$ c) $y = 2(x + 3)^2 + 2$
 b) $y = 2(x + 3)^2 - 2$ d) $y = (x - 3)^2 - 2$

_____ 11) The parent function $f(x) = x^2$ is reflected across the x -axis, vertically stretched by a factor of 3, and translated right 7 units to create g . Use the description to write the quadratic function in vertex form.

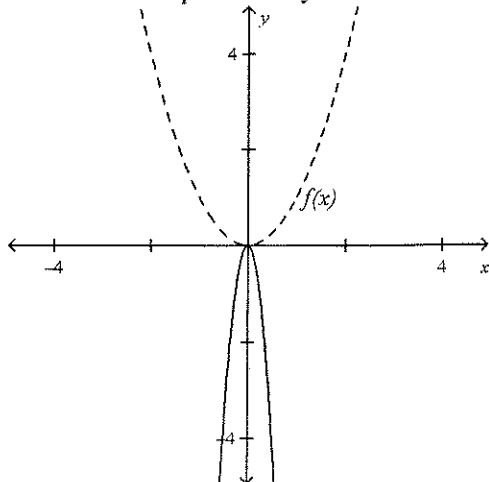
- a) $g(x) = 7(x + 3)^2$ c) $g(x) = -3(x + 7)^2$
 b) $g(x) = -3(x - 7)^2$ d) $g(x) = 3(x - 7)^2$

_____ 12) Find the zeros of $f(x) = x^2 - 2x - 3$ by using a graph and table.

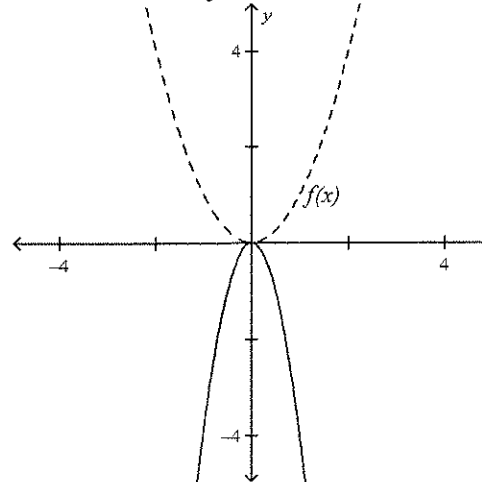
- a) -1 and 3 b) -3 c) 1 and -3 d) 1 and -4

_____ 13) Using the graph of $f(x) = x^2$ as a guide, describe the transformations, and then graph the function $g(x) = -4x^2$.

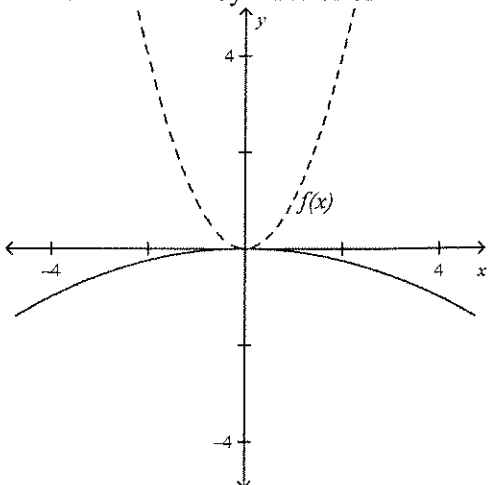
- a) A reflection across the x -axis and a horizontal compression by a factor of 4.



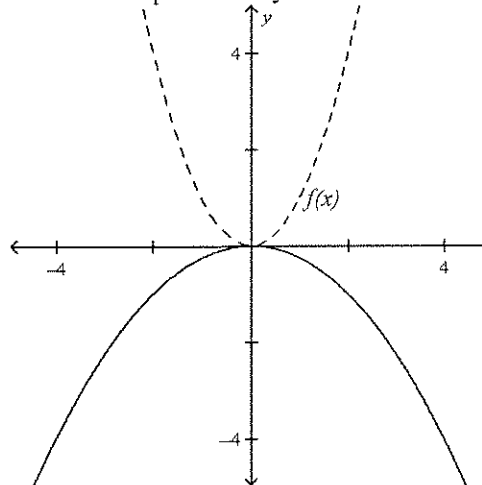
- c) A reflection across the x -axis and a vertical stretch by a factor of 4.



- b) A reflection across the x -axis and a horizontal stretch by a factor of 4.



- d) A reflection across the x -axis and a vertical compression by a factor of 4.



_____ 14) Solve by factoring. $5x^2 + 39x - 54 = 0$

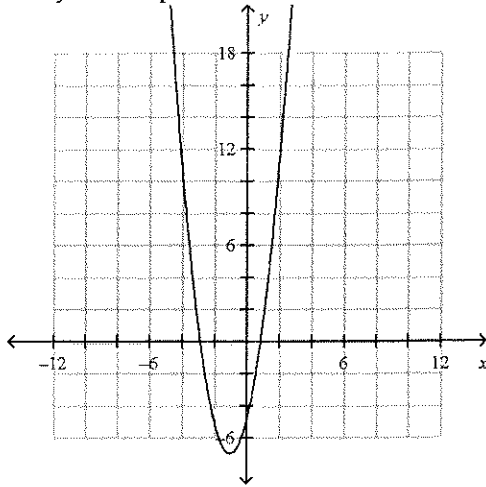
- a) $9, -\frac{5}{9}$ b) $-9, \frac{6}{5}$ c) $-9, 5$ d) $\frac{6}{5}, -\frac{5}{9}$

_____ 15) Write a quadratic function in standard form with zeros 9 and -7 .

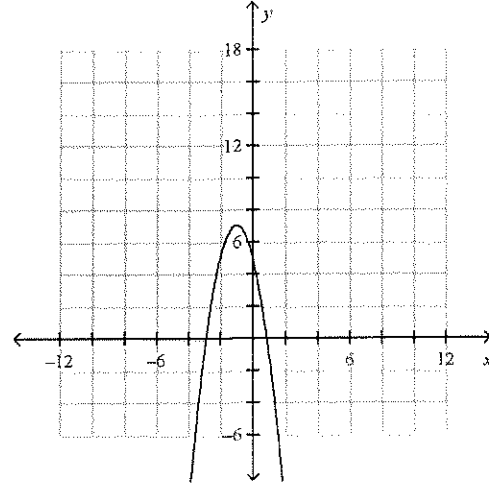
- a) $f(x) = x^2 + 2x - 63$ c) $0 = x^2 - 2x - 63$
 b) $f(x) = x^2 + 4x + 4$ d) $f(x) = x^2 - 2x - 63$

16) Consider the function $f(x) = -4x^2 - 8x + 10$. Determine whether the graph opens up or down. Find the axis of symmetry, the vertex and the y-intercept. Graph the function.

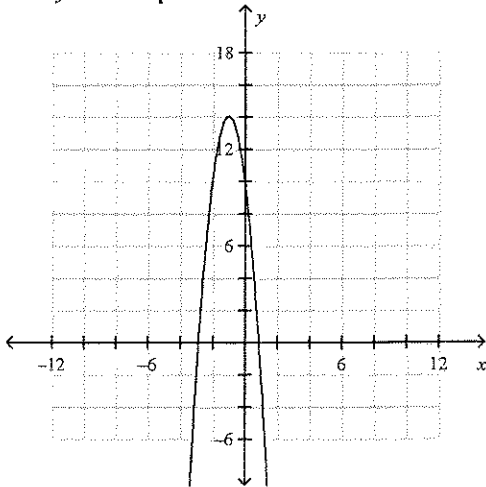
- a) The parabola opens upward.
 The axis of symmetry is the line $x = -1$.
 The vertex is the point $(-1, -6)$.
 The y-intercept -5 .



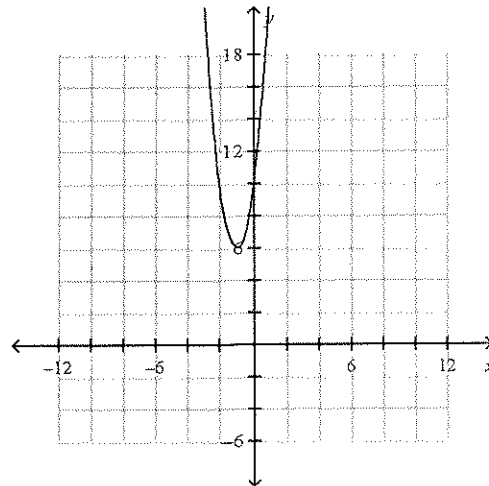
- c) The parabola opens downward.
 The axis of symmetry is the line $x = -1$.
 The vertex is the point $(-1, 7)$.
 The y-intercept is 5.



- b) The parabola opens downward.
 The axis of symmetry is the line $x = -1$.
 The vertex is the point $(-1, 14)$.
 The y-intercept is 10.

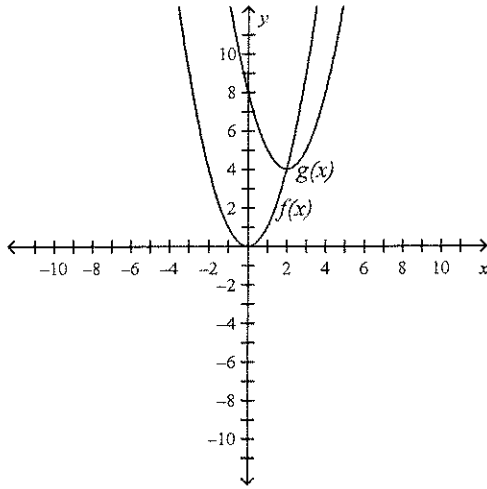


- d) The parabola opens upward.
 The axis of symmetry is the line $x = -1$.
 The vertex is the point $(-1, 14)$.
 The y-intercept 10.

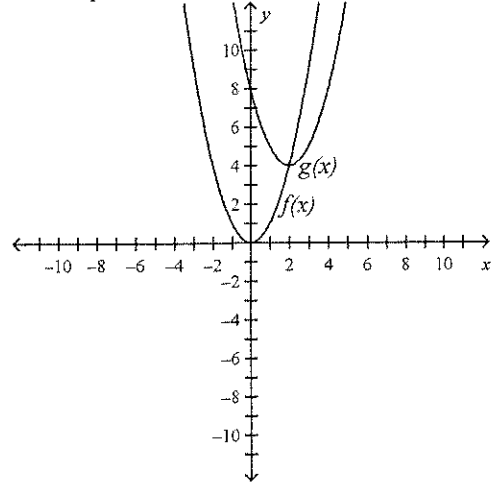


_____ 17) Using the graph of $f(x) = x^2$ as a guide, describe the transformations, and then graph the function $g(x) = (x - 2)^2 + 4$.

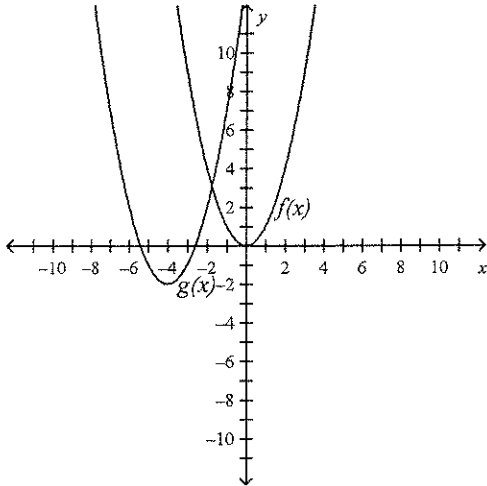
a) $g(x)$ is $f(x)$ translated 2 units left and 4 units down.



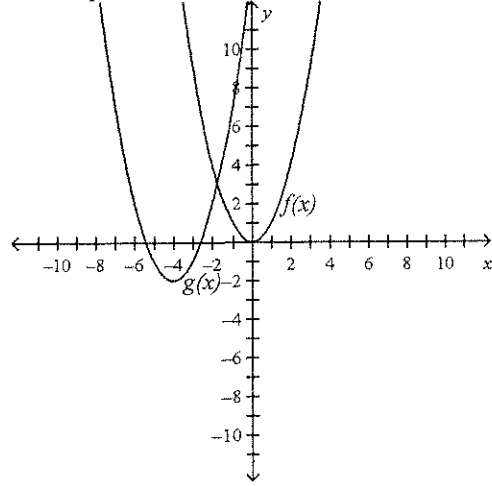
c) $g(x)$ is $f(x)$ translated 2 units right and 4 units up.



b) $g(x)$ is $f(x)$ translated 4 units left and 2 units down.



d) $g(x)$ is $f(x)$ translated 4 units right and 2 units up.



Numeric Response

18) Identify the axis of symmetry for the graph of $f(x) = 2x^2 + 4x + 2$.

Analytic Geometry

Quadratic Function Test B

1. To find the roots for the quadratic equation modeling her science project, Sally used the quadratic formula and found the following values for x : $x = -3 \pm \sqrt{-6}$. What is the simplified version of her roots?
 A. $-3 \pm \sqrt{6}$ B. $-3 \pm 3\sqrt{2}$ C. $-3 \pm i\sqrt{6}$ D. $-3 \pm 2i\sqrt{6}$

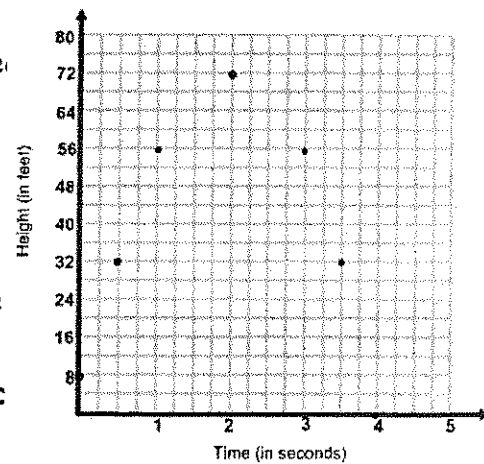
2. What is the axis of symmetry of the function $f(x) = 10x^2 - 9x - 3$?
 A. $x = 9/10$ B. $x = 9/20$ C. $x = -9/20$ D. $x = -3$

3. A ball was shot upward by a machine that was several feet above the ground with an initial speed of 64 feet per second. The height of the ball at given time can be represented as

$$f(x) = -16x^2 + 64x + 8.$$

The graph to the right represents this function. For which of these times is the rate of change Ne

- A. between 0 and 2 seconds B. only at 2 sec
 C. between 2 and 4 seconds D. only after 4



4. What is the maximum height of the ball?

- A. 8 feet
 B. 72 feet
 C. 80 feet
 D. 32 feet

5. Which is true about the solutions for $-7x + 3x^2 + 3 = 0$?

- A. All real numbers are solutions for this equation.
 B. This equation has two distinct real solutions.
 C. This equation has only one distinct solution.
 D. This equation has no real solutions.