#95a

Extra Practice 1 for Retake of 9-5 Quiz

John fires a rocket into the air. The equation $h = -16t^2 + 40t$ models the height h in feet of the rocket after t seconds.

a. What height at time t=0?

b. How long is the rocket in the air?

c. At what time does the rocket reach its maximum height?

d. What is the maximum height the rocket reaches?

e. Write an equation for the height rocket if John fires the rocket from a platform that is 10 feet above the ground?

Bobby fires a rocket into the air. The equation $h = -16t^2 + 80t + 5$ models the height h in feet of the rocket after t seconds.

a. What height at time t=0?

b. How long is the rocket in the air?

c. At what time does the rocket reach its maximum height?

d. What is the maximum height the rocket reaches?

e. Write an equation for the height rocket if Bobby fires the rocket from the ground?

Extra Practice 1 for Retake of 9-5 Quiz

Key

John fires a rocket into the air. The equation $h = -16t^2 + 40t$ models the height h in feet of the rocket after t seconds.

a. What height at time t=0?

h = 0 ft.

b. How long is the rocket in the air?

2.5 sec.

c. At what time does the rocket reach its maximum height?

1.25 sec

d. What is the maximum height the rocket reaches?

25 ft

e. Write an equation for the height rocket if John fires the rocket from a platform that is 10 feet above the ground?

$h = -16t^2 + 40t + 10$

Bobby fires a rocket into the air. The equation $h = -16t^2 + 80t + 5$ models the height h in feet of the rocket after t seconds.

a. What height at time t=0?

5 ft

b. How long is the rocket in the air?

5.06 sec

c. At what time does the rocket reach its maximum height?

2.5 sec

d. What is the maximum height the rocket reaches?

105 ft

e. Write an equation for the height rocket if Bobby fires the rocket from the ground?

$h = -16t^2 + 80t$

#95b

Billy fires a rocket into the air. The equation $h = -16t^2 + 92t$ models the height h in feet of the rocket after t seconds.

a. What height at time t=0?

b. How long is the rocket in the air?

c. At what time does the rocket reach its maximum height?

d. What is the maximum height the rocket reaches?

e. If Billy fires the rocket from a platform that is 7 feet above the ground, then how much LONGER is it in the air than the rocket fired from the ground?

Hoppy fires a rocket into the air from the bottom of a well. The equation $h = -16t^2 + 80t - 20$ models the height h in feet of the rocket after t seconds.

a. What height at time t=0?

b. How long is the rocket in the air?

c. At what time does the rocket reach its maximum height?

d. What is the maximum height the rocket reaches?

e. How much HIGHER will the rocket go into the air if it is fired from the ground?

#96a

Extra Practice 2 for Retake of 9-5 Quiz

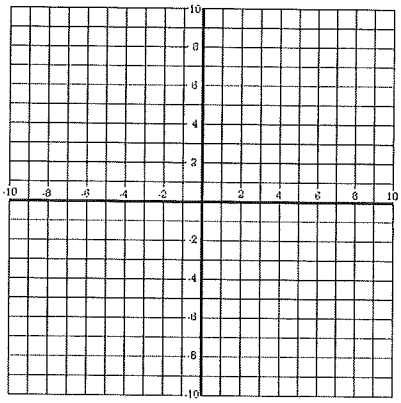
1. Use the equation $y = x^2 - 3x - 4$ to answer the following:

a. Find the zeros of the function
b. State the y-intercept
c. Find the vertex AND state if it is a minimum or maximum.

f. Create a t-table:

x	y
-2	
-1	
0	
1	
2	
3	
4	

g. Graph the quadratic – label the x-intercepts, y-intercept, and vertex.



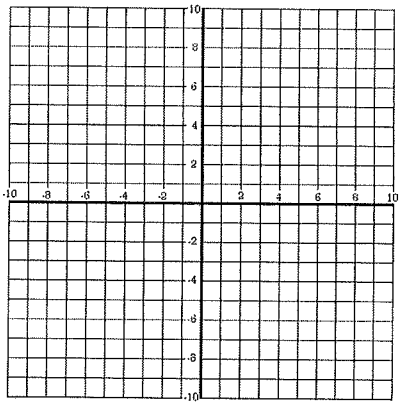
2. Use the equation $y = x^2 - 9x + 18$ to answer the following:

a. Find the zeros of the function
b. State the y-intercept
c. Find the vertex AND state if it is a minimum or maximum.

f. Create a t-table:

x	y
1 ~~-7~~	
2 ~~-6~~	
3 ~~-5~~	
4 ~~-4~~	
5 ~~-3~~	
6 ~~-2~~	
7 ~~-1~~	

g. Graph the quadratic – label the x-intercepts, y-intercept, and vertex.



#96 b

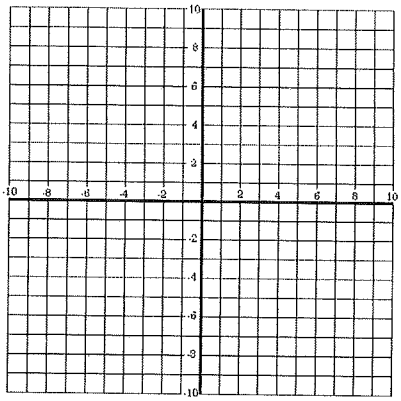
3. Use the equation $y = x^2 - 4$ to answer the following:

a. Find the zeros of the function
b. State the y-intercept
c. Find the vertex AND state if it is a minimum or maximum.

f. Create a t-table:

x	y
-3	
-2	
-1	
0	
1	
2	
3	

g. Graph the quadratic – label the x-intercepts, y-intercept, and vertex.



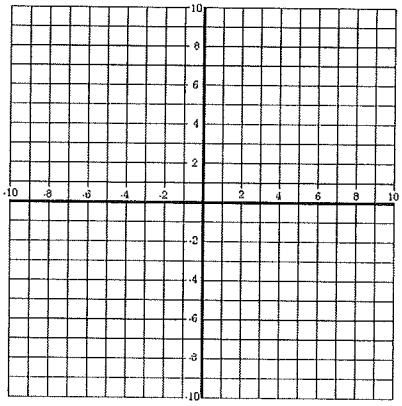
4. Use the equation $y = x^2 - x - 6$ to answer the following:

a. Find the zeros of the function
b. State the y-intercept
c. Find the vertex AND state if it is a minimum or maximum.

f. Create a t-table:

x	y
-2	
-1	
0	
1	
2	
3	
4	

g. Graph the quadratic – label the x-intercepts, y-intercept, and vertex.



#96c

8. Jack fires a rocket into the air. The equation $h = -16t^2 + 64t$ models the height h in feet of the rocket after t seconds.

a. What height at time t=0?

b. How long is the rocket in the air?

c. At what time does the rocket reach its maximum height?

d. What is the maximum height the rocket reaches?

e. Write an equation for the height rocket if Jack fires the rocket from a platform that is 3 feet above the ground?

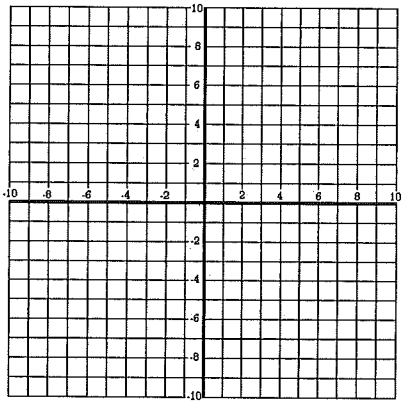
9. Use the equation $y = x^2 - 2x - 8$ to answer the following:

a. Find the zeros of the function
b. State the y-intercept
c. Find the vertex AND state if it is a minimum or maximum.
d. State the axis of symmetry
e. State the domain and range

f. Create a t-table:

x	y
-2	
-1	
0	
1	
2	
3	
4	

g. Graph the quadratic – label the x-intercepts, y-intercept, and vertex.



#96d

30. SPRINKLERS The path of water from a sprinkler can be modeled by quadratic functions. The following functions model paths for three different sprinklers.

Sprinkler A: $y = -0.35x^2 + 3.5$ Sprinkler B: $y = -0.21x^2 + 1.7$
Sprinkler C: $y = -0.08x^2 + 2.4$

a. Which sprinkler will send water the farthest? Explain.
b. Which sprinkler will send water the highest? Explain.
c. Which sprinkler will produce the narrowest path? Explain.

Standardized Test Practice

41. SHORT RESPONSE A tutor charges a flat fee of \$55 and \$30 for each hour of work. Write a function that represents the total charge C, in terms of the number of hours h worked.

42. Which *best* describes the graph of $y = 2x^2$?

A a line with a y-intercept of 2 and an x-intercept at the origin
B a parabola with a minimum point at (0, 0) and that is wider than the graph of $y = x^2$
C a parabola with a maximum point at (0, 0) and that is narrower than the graph of $y = x^2$
D a parabola with a minimum point at (0, 0) and that is narrower than the graph of $y = x^2$

43. Candace is 5 feet tall. If 1 inch is about 2.54 centimeters, how tall is Candace to the nearest centimeter?

F 13 cm H 123 cm
G 26 cm J 152 cm

44. While in England, Imani spent 49.60 British pounds on a pair of jeans. If this is equivalent to \$100 in U.S. currency, how many British pounds would Imani have spent on a sweater that cost \$60?

A 2976 pounds
B 29.76 pounds
C 19.84 pounds
D 8.26 pounds

#97a

11 – Twenty four people are employees at a local Rite-Aid. The starting annual salary among employees is $25,000. The maximum annual salary among the employees is $80,000. Rite-Aid wants to encourage employees to save money so they agree to match any money that the employees save in a retirement fund. If an employee saves $100, the Rite-Aid will also place $100 into the employee's retirement fund. The only limit is that Rite-Aid will not match more than 10% of the employee's salary.

a. Beth earns a salary of $40,000. What is the maximum amount of money that her employer will add to her savings?

b. Let x represent the amount the employer adds to Beth's savings. What is the domain of x?

c. Let y represent the total amount saved in Beth's account. What is the range of y? Beth does not invest more than 10% of her income.

d. The total of the salaries of all 24 employees is equal to 1.28 million dollars. Let x represent the total the company will contribute to all the savings accounts. What is the domain of x?

12 – A football is kicked from a tee through the air and its height above the ground is modeled by the function $h(t) = -16t^2 + 64t$ where t is measured in seconds and h(t) is measured in feet.

a. What height is the ball when it is kicked?

b. What is the height of the ball at time t = 3?

c. What time does the ball land on the ground?

d. What is the maximum height reached by the ball?

e. What is the average rate of change from time t = 0 to t = 1?

f. What is the average rate of change from time t = 2 to t = 3?

97b

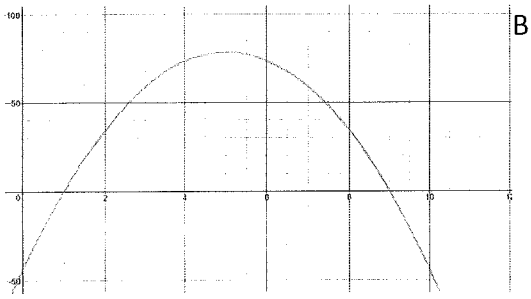
13 – A football is punted through the air off the top of the school and its height above the ground is modeled by the function $h(t) = -4.9t^2 + 49t + 44.1$ where t is measured in seconds and h(t) is measured in meters.

a. What height is the ball when it is kicked?

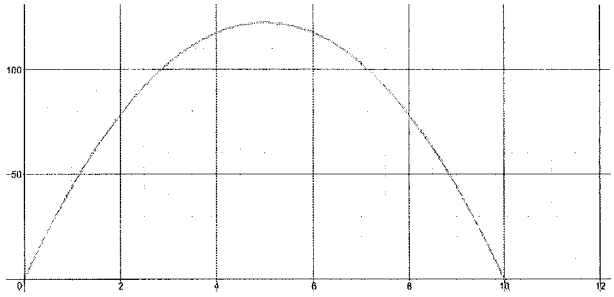
b. What is the height of the ball at time t = 3?

c. Which of the following shows the graph of h(t)?

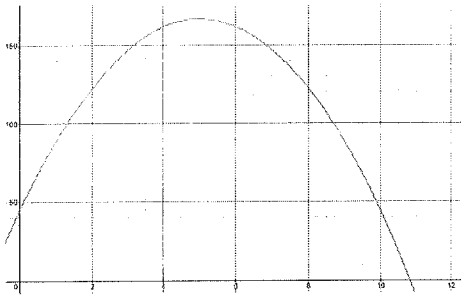
A



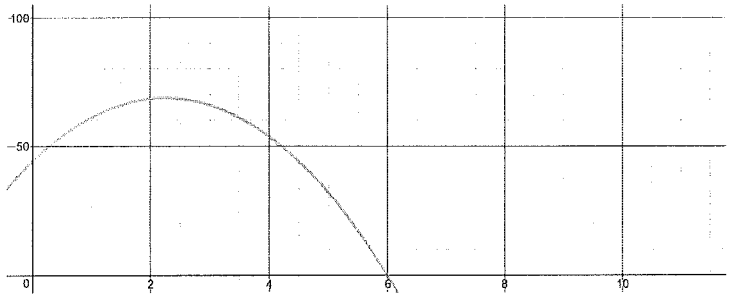
B



C



D



d. What time does the ball land on the ground?

e. What is the maximum height reached by the ball?

f. What is the average rate of change from time t = 0 to t = 1?

g. What is the average rate of change from time t = 4 to t = 8?

11 – Twenty four people are employees at a local Rite-Aid. The starting annual salary among employees is $25,000. The maximum annual salary among the employees is $80,000. Rite-Aid wants to encourage employees to save money so they agree to match any money that the employees save in a retirement fund. If an employee saves $100, the Rite-Aid will also place $100 into the employee's retirement fund. The only limit is that Rite-Aid will not match more than 10% of the employee's salary.

a. Beth earns a salary of $40,000. What is the maximum amount of money that her employer will add to her savings?

$40000(.1) = \$4000$

b. Let x represent the amount the employer adds to Beth's savings. What is the domain of x?

$0 \le x \le \$4000$

c. Let y represent the total amount saved by Beth. What is the range of y?

$0 \le y \le \$8000$

d. The total of the salaries of all 24 employees is equal to 1.28 million dollars. Let x represent the total the company will contribute to all the savings accounts. What is the domain of x?

$0 \le x \le \$28{,}000$

12 – A football is kicked from a tee through the air and its height above the ground is modeled by the function $h(t) = -16t^2 + 64t$ where t is measured in seconds and h(t) is measured in feet.

a. What height is the ball when it is kicked?

$h(0) = 0$ ft.

b. What is the height of the ball at time t = 3?

$h(3) = -16(3)^2 + 64(3)$ $\quad h(3) = 48$ ft

d. What is the maximum height reached by the ball?

peak at $t = 2$ $\quad h(2) = -16(2)^2 + 64(2)$ $\quad h(2) = 64$ ft

d. What time does the ball land on the ground?

$-16t^2 + 64t = 0$

$-16t(t - 4) = 0$

$t = 0$ & 4

e. What is the average rate of change from time t = 0 to t = 1?

t	h(t)	
0	0	+48
1	48	

(+1)

$\frac{48}{1} = 48$ ft/s

f. What is the average rate of change from time t = 2 to t = 3?

t	h(t)	
2	64	−16
3	48	

(+1)

$\frac{-16}{1} = -16$ ft/s

13 – A football is punted through the air off the top of the school and its height above the ground is modeled by the function $h(t) = -4.9t^2 + 49t + 44.1$ where t is measured in seconds and h(t) is measured in meters.

a. What height is the ball when it is kicked?

44.1 m.

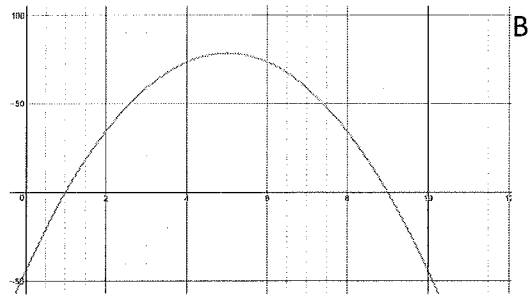
b. What is the height of the ball at time t = 3?

$h(3) = -4.9(3)^2 + 49(3) + 44.1$

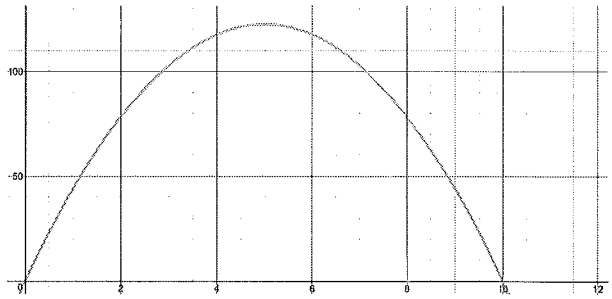
$h(3) = 147$ m

c. Which of the following shows the graph of h(t)?

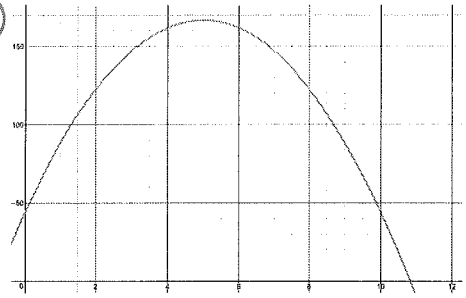
A



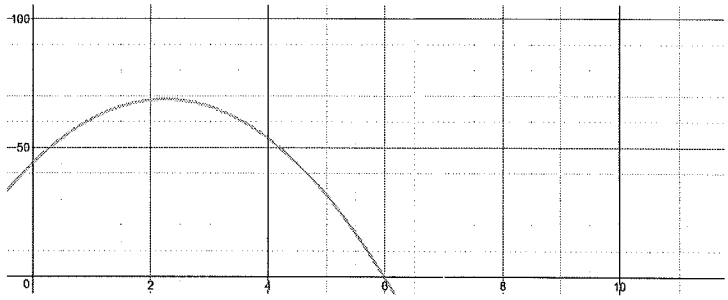
B



C



D



d. What is the maximum height reached by the ball?

A. t = 3 (B) t = 5 C t = 7 D t = 9

e. What time does the ball land on the ground?

$0 = -4.9t^2 + 49t + 44.1$

$t = 10.83$ sec.

f. What is the average rate of change from time t = 0 to t = 1?

t	h(t)
0	44.1
1	88.2

+1 → 44.1

44.1 m/s

* g. What is the average rate of change from time t = 8 to t = 4?

t	h(t)
4	161.7
8	122.5

+4 → −39.2

$\frac{-39.2}{4} = -9.8$ m/s