

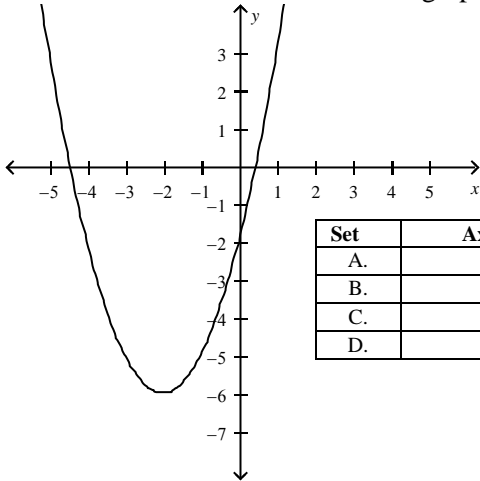
1. What is the degree of a quadratic function?

- a. 1 b. 2 c. 3 d. 0

2. What is the y-intercept for $y = 3x^2 + 2x - 5$?

- a. -5
b. 5
c. 2
d. 3

3. Which set of data is correct for this graph?



- a. Set A.
b. Set B.
c. Set D.
d. Set C.

Set	Axis of Symmetry	Vertex	Domain	Range
A.	$x = -2$	$(-2, 6)$	$x \in \mathbb{R}$	$y \in \mathbb{R}$
B.	$x = -6$	$(-6, -2)$	$-8 \leq x \leq 4$	$-8 \leq y$
C.	$x = -2$	$(-2, -6)$	$x \in \mathbb{R}$	$-6 \leq y$
D.	$x = 2$	$(2, 6)$	$-6 \leq x \leq 2$	$-6 \leq y$

4. What are the x- and y-intercepts for the function $f(x) = x^2 + 5x + 6$?

- a. $x = -4, x = -2, y = 6$ b. no x-intercepts, $y = 6$ c. $x = -2.5, y = 6$ d. $x = -3, x = -2, y = 6$

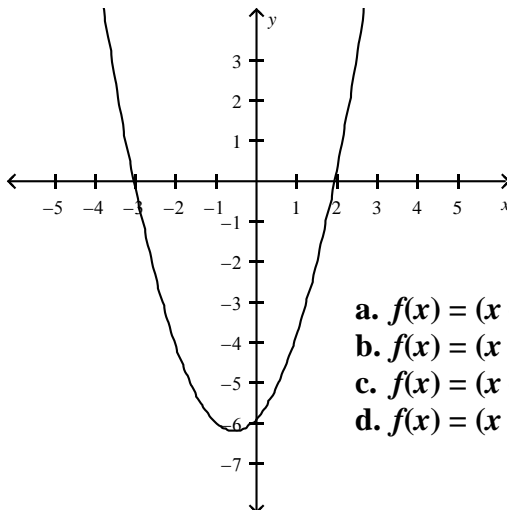
5. The points $(-2, 4)$ and $(1, 4)$ are located on the same parabola. What is the equation for the axis of symmetry for this parabola?

- a. $x = -0.5$ b. $x = -1$ c. $x = 0.5$ d. $x = -1.5$

6. Find the zero's of: $x^2 - 5x = -4$

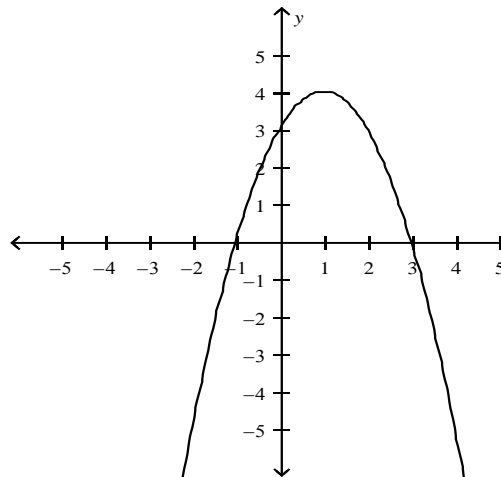
- a. $x = -4, x = 1$
b. $x = -4, x = -1$
c. $x = 4, x = -1$
d. $x = 4, x = 1$

7. What is the correct quadratic function for this parabola?



- a. $f(x) = (x - 2)(x - 3)$
b. $f(x) = (x + 2)(x - 3)$
c. $f(x) = (x - 2)(x + 3)$
d. $f(x) = (x + 2)(x + 3)$

8. What is the correct quadratic function for this parabola?



- a. $f(x) = (x - 1)(x + 3)$
b. $f(x) = (x + 1)(x + 3)$
c. $f(x) = -(x + 1)(x - 3)$
d. $f(x) = (1 - x)(3 - x)$

9. Which set of data is correct for the quadratic relation $f(x) = 4(x - 0.5)(x + 1)$?

	x-intercepts	y-intercept	Axis of Symmetry	Vertex
A.	$(-0.5, 0), (1, 0)$	$y = -2$	$x = 0.25$	$(0.25, -1.25)$
B.	$(0.5, 0), (-1, 0)$	$y = -2$	$x = -0.25$	$(-0.25, -2.25)$
C.	$(-0.5, 0), (1, 0)$	$y = 0.5$	$x = 0.5$	$(0.5, 0)$
D.	$(0.5, 0), (-1, 0)$	$y = -0.5$	$x = -0.5$	$(-0.5, -2)$

- a. Set D.
- b. Set B.
- c. Set A.
- d. Set C.

10. Which relation is the factored form of $f(x) = x^2 + 2x - 3$?

- a. $f(x) = x(x + 2) + 3$
- b. $f(x) = (x - 2)^2$
- c. $f(x) = (x + 3)(x - 1)$
- d. $f(x) = (x - 3)(x + 1)$

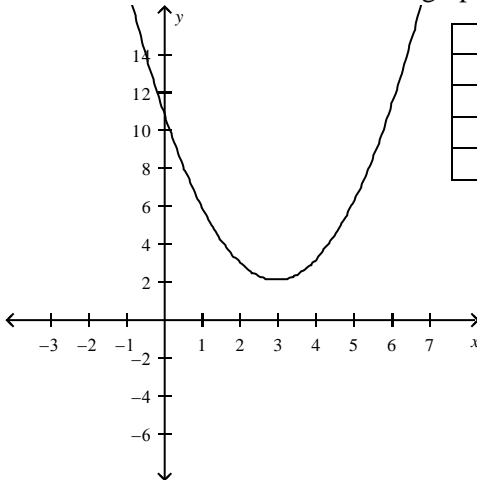
11. Which relation is the factored form of $f(x) = -3x^2 - 3x + 6$?

- a. $f(x) = 3(x + 2)(1 - x)$
- b. $f(x) = -3(x + 2)(x - 1)$
- c. $f(x) = (3x - 3)^2$
- d. $f(x) = -3(x + 3)^2$

12. Solve $25x^2 - 36 = 0$ by factoring.

- a. $x = \frac{6}{5}, x = -\frac{6}{5}$
- b. $x = -6, x = 5$
- c. $x = 6, x = -6$
- d. $x = \frac{5}{6}, x = -\frac{5}{6}$

16. Which set of data is correct for this graph?



	Axis of Symmetry	Vertex	Domain	Range
A.	$x = 3$	$(3, 2)$	$x \in \mathbb{R}$	$2 \leq y$
B.	$x = 3$	$(2, 3)$	$x \in \mathbb{R}$	$y \in \mathbb{R}$
C.	$x = 2$	$(2, 3)$	$-1 \leq x \leq 7$	$2 \leq y$
D.	$x = 3$	$(3, 2)$	$-2 \leq x \leq 8$	$0 \leq y$

- a. Set A.
- b. Set C.
- c. Set D.
- d. Set B.

Short Answer

17. If a parabola with equation $y = ax^2 + bx + c$ opens downward, will a be positive or negative?

18. If a parabola with equation $y = ax^2 + bx + c$ has a y-intercept above the x-axis, will c be positive or negative?

13. Solve $2y^2 - 3y + 1 = 0$ using the quadratic formula.

- a. $y = 1, y = -\frac{1}{2}$
- b. $y = 1, y = -\frac{1}{2}$
- c. $y = -1, y = \frac{1}{2}$
- d. $y = 1, y = \frac{1}{2}$

14. Which parabola opens upward?

- a. $y = 2x - 4x^2 - 5$
- b. $y = 2 + 4x - 5x^2$
- c. $y = 4 - 2x^2 - 5x$
- d. $y = -5x + 4x^2 + 2$

15. What are the x- and y-intercepts for the function $f(x) = x^2 - 2x + 3$?

- a. no x-intercepts, $y = 3$
- b. $x = 0, x = 3, y = 2$
- c. $x = -1, x = 3, y = 3$
- d. $x = -3, x = 1, y = 3$

19. Fill in the table for the relation $y = -x^2 + 1x + 12$.

y-intercept	
x-intercept(s)	
Axis of symmetry	
Vertex	
Domain	
Range	

20. Make a table of values, then sketch the graph of the relation $y = x^2 - x + 7$.

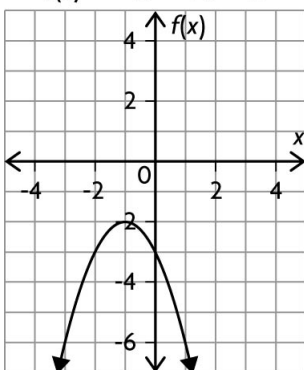
21. Fill in the table for the relation $y = x^2 - 6x - 4$. **USE GRAPHING CALCULATOR!**

Maximum or minimum	
Axis of symmetry	
Vertex	

22. Solve $x^2 - 8x + 15 = 0$ by graphing the corresponding function and determining the zeros (without a graphing calculator).

23. Determine the roots of the corresponding quadratic equation for the graph.

$$f(x) = -x^2 - 2x - 3$$



24. A quadratic function has an equation that can be written in the form $f(x) = a(x - r)(x - s)$. The graph of the function has x -intercepts at $(3, 0)$ and $(6, 0)$ and passes through the point $(7, -4)$. Write the equation of the function.

25. Fill in the table for the quadratic function $f(x) = -(x - 4)(x - 6)$.

y-intercept	
Zeros	
Axis of symmetry	
Vertex	

26. Sketch the graph of the relation $y = (x - 4)(x - 6)$, then state the domain and range.

27. Determine the equation that defines a quadratic function with x -intercepts located at $(4, 0)$ and $(12, 0)$ and a y -intercept of $(0, -24)$. Provide a sketch to support your work.

28. Solve $4x^2 + 15x + 9 = 0$ by factoring.

29. Solve $x^2 + 3x = -4x - 12$ using the quadratic formula.

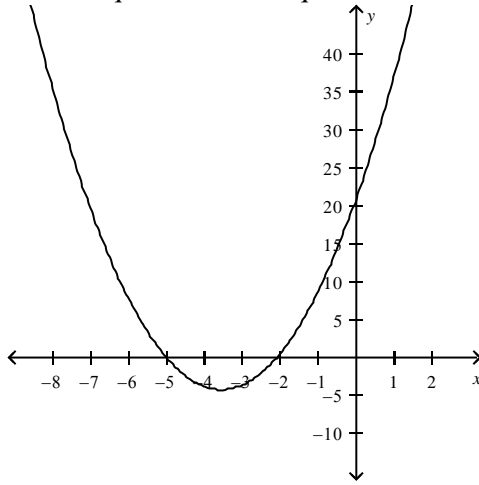
Verify your solution

Problems

30. A skier's jump can be modelled by the function $y = -4.9x^2 + 3.2x + 2.5$, where y is the skier's height above the ground, in metres, and x is the time, in seconds, that the skier is in the air.

- a) Use technology to sketch graph the function from your graphing calculator.
- b) Determine the coordinates of the vertex.
- c) Determine the skier's maximum height in metres.
- d) Determine the domain and range of this function.

31. Determine the equation for this quadratic function. Write the equation in standard form. Show all your steps.



32.

1. Graph $y = x^2 + 2x + 1$ and state the following:

Vertex	
Max or Min??	
Axis of Symmetry	
y-intercept	
Domain	
Range	
x-intercepts	
Zeros	
Roots	
Factored form	

Create a table of values!

33. Use the discriminant to determine the number of roots:

a) $y = 2x^2 - 4x - 1$

b) $y = x^2 + 4x + 100$

RF2 Unit Test Review

Answer Section

MULTIPLE CHOICE

- ANS: B
- ANS: A
- ANS: D
- ANS: D
- ANS: A
- ANS: D
- ANS: C
- ANS: C
- ANS: B
- ANS: C
- ANS: B
- ANS: A
- ANS: D
- ANS: D
- ANS: A
- ANS: A

SHORT ANSWER

17. ANS:
negative

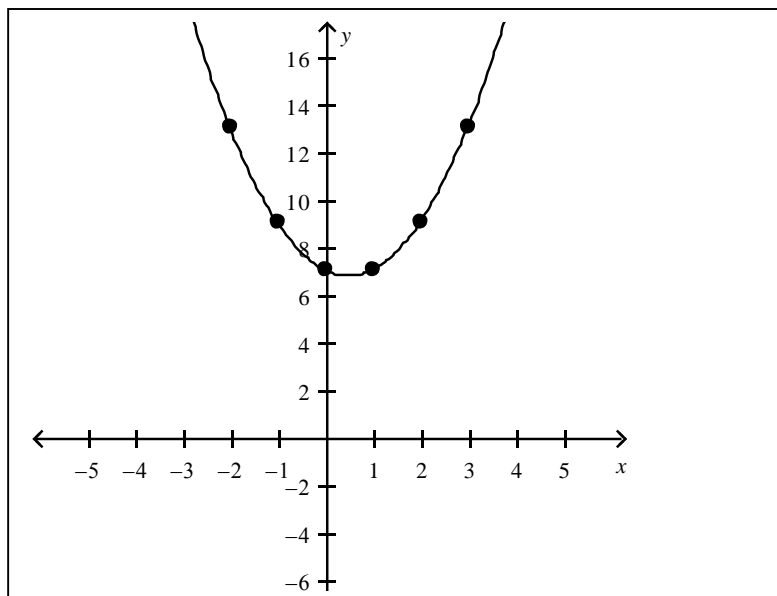
18. ANS:
positive

19. ANS:

y-intercept	(0, 12)
x-intercept(s)	4 & -3
Axis of symmetry	$x = 0.5$
Vertex	(0.5, 10.25)
Domain	$x \in \mathbb{R}$
Range	$y \geq 10.25$

20. ANS:

x	y
-2	13
-1	9
0	7
1	7
2	9
3	13



21. ANS:

Maximum or minimum	minimum
Axis of symmetry	$x = 3$
Vertex	$(3, -13)$

22. ANS:

$$x = 5, x = 3$$

23. ANS:

There are no roots.

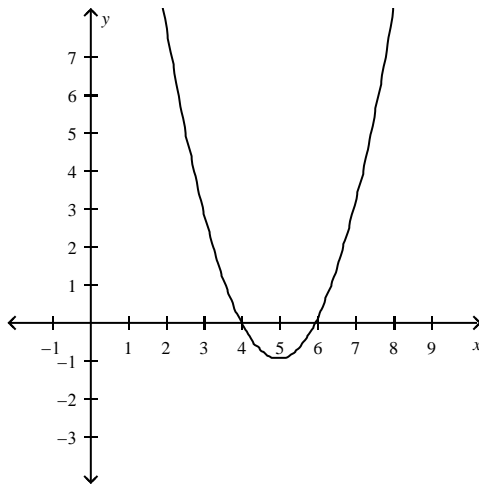
24. ANS:

$$f(x) = -(x - 3)(x - 6)$$

25. ANS:

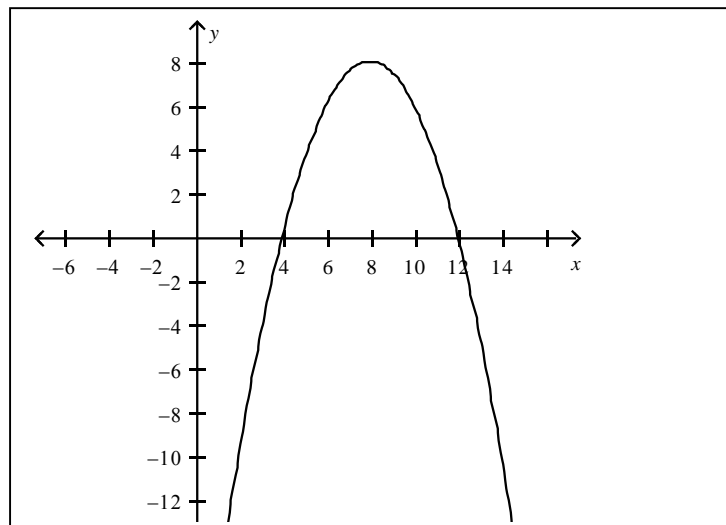
y-intercept	$y = -24$
Zeros	$(4, 0), (6, 0)$
Axis of symmetry	$x = 5$
Vertex	$(5, 1)$

26. ANS: $x \in \mathbb{R}, y \leq 1$



27. ANS:

$$y = -0.5(x - 4)(x - 12)$$



28. ANS:

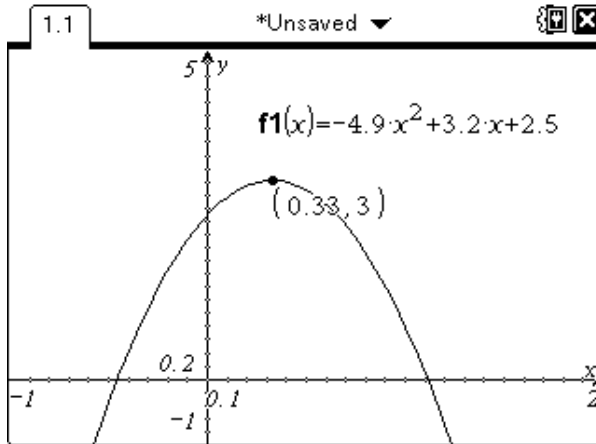
$$x = -\frac{3}{4}, x = -3$$

29. ANS:

$$x = -4, x = -3$$

30. ANS:

a)



b) (0.33, 3.0)

c) The skier's maximum height is 3.0 m.

d) Domain: $0 \leq x \leq 1.1$

Range: $0 \leq y \leq 3.0$

31. ANS:

The x -intercepts are $(-5, 0)$ and $(-2, 0)$, so $r = -5$ and $s = -2$.

The graph opens upward so $a > 0$.

$$y = a(x - r)(x - s)$$

$$y = a[x - (-5)](x - (-2))$$

$$y = a(x + 5)(x + 2)$$

The y -intercept is $(0, 20)$.

$$y = a(x + 5)(x + 2)$$

$$20 = a(0 + 5)(0 + 2)$$

$$20 = 10a$$

$$2 = a$$

$$\text{So, } y = 2(x + 5)(x + 2)$$

In standard form:

$$y = 2(x + 5)(x + 2)$$

$$y = 2(x^2 + 5x + 2x + 10)$$

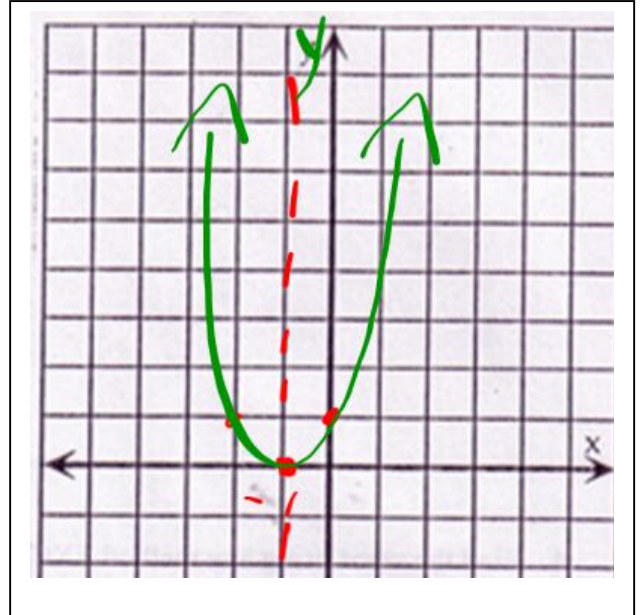
$$y = 2x^2 + 14x + 20$$

32.

1. Graph $y=x^2+2x+1$ and state the following:

Vertex	$(-1, 0)$
Max or Min??	Min
Axis of Symmetry	$x = -1$
y-intercept	1
Domain	$x \in \mathbb{R}$
Range	$y \geq 0, y \in \mathbb{R}$
x-intercepts	$(-1, 0)$
Zeros	$(-1, 0)$
Roots	$(-1, 0) \Rightarrow 1 \text{ root}$
Factored form	$y = (x+1)(x+1)$

Create a table of values!



x	y
-2	1
-1	0
0	1
1	4
2	9

33. Use the discriminant to determine the number of roots:

a) $y = 2x^2 - 4x - 1$

b) $y = x^2 + 4x + 100$

$b^2 - 4ac$

$b^2 - 4ac$

$(-4)^2 - 4(2)(-1)$

$(4)^2 - 4(1)(100)$

$16 - (-8)$

$16 - 400$

$+24$ (2 roots)

-384 (no roots)