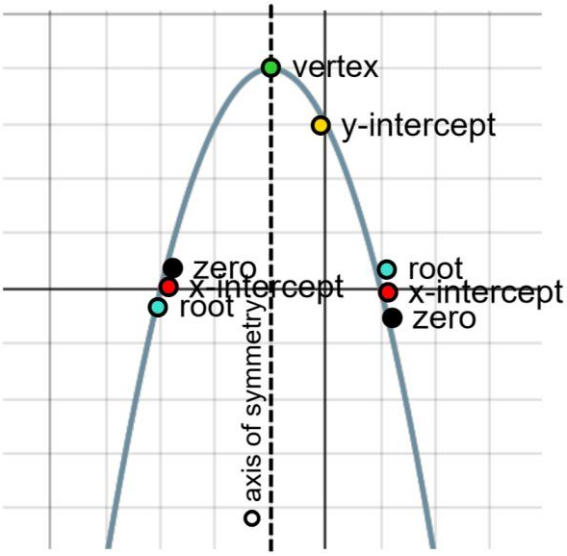
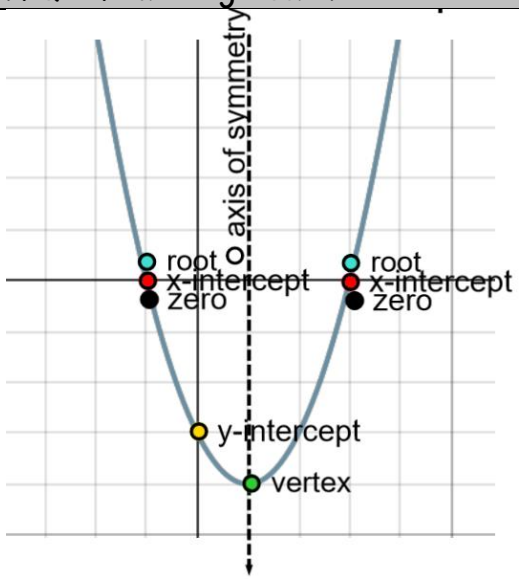
# Algebra 1 – Unit 11 Guide

## Characteristics of Quadratic Graphs and Quadratic Regression




### Factors from x-intercepts

x-intercepts: (-3,0) and (1,0)

Factors: (x+3)(x-1)

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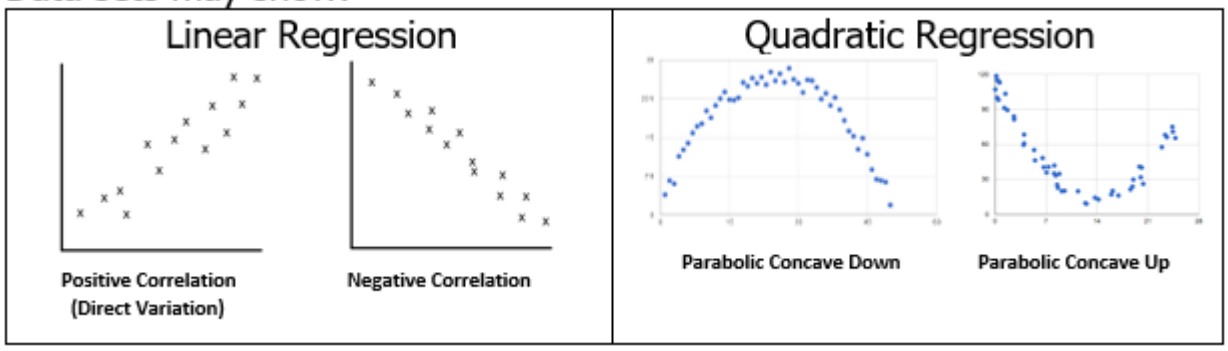
x-intercepts: (-1,0) and (3,0)

Factors: (x+1)(x-3)

### Quadratic Regression

Data sets may show:




First click the +, then table, and create a table with your data:

In another input line, type the **general regression formula for quadratics.**

$$y_1 \sim ax_1^2 + bx_1 + c$$

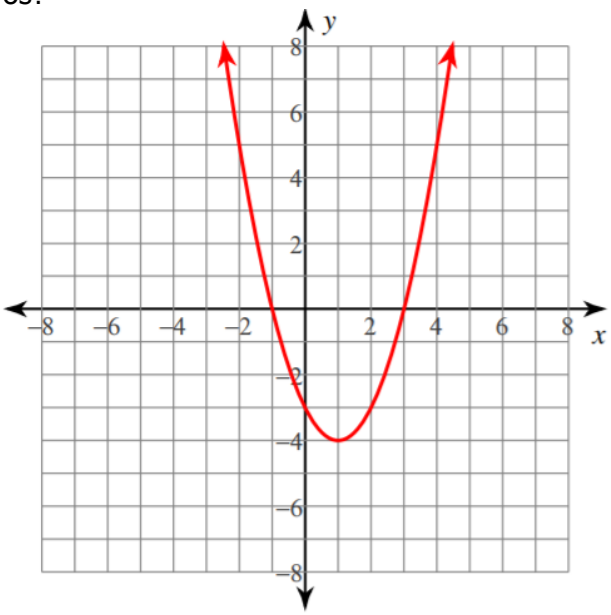
Use the PARAMETERS to write the equation.
Plug in the values for a, b, and c.

# Algebra 1 – Unit 11 Study Packet

## Characteristics of Quadratic Graphs and Quadratic Regression

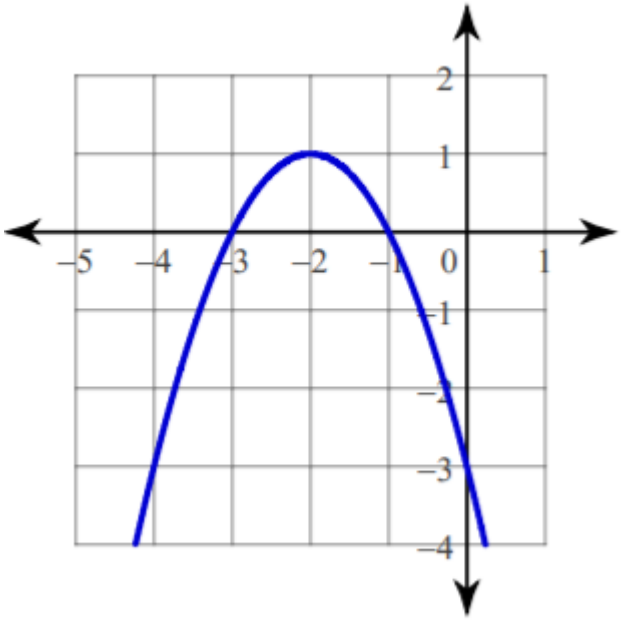
### Skill #1 – Identify the zeros and intercepts of a function.

1. Given the following graph of h(x) what are the zeros?




A {-1,-3}
B {1,-3}
C {-1,3}
D {1,3}

2. Given the following graph of h(x) what are the zeros?




A {-1,-3}
B {1,-3}
C {-1,3}
D {1,3}

3. Select *all* zeros of $f(x) = 3x^2 - 4x - 7$

| | | |
|---|---|---|
| -7 | -3/2 | -7/3 |
| -4 | -1 | 1 |
| 7/3 | 4 | 7 |

4. Identify *all* functions that have a zero of -4:

| | |
|---|---|
| $f(x) = x^2 + 2x - 8$ | $f(x) = -x^2 + 3x + 4$ |
| $f(x) = \frac{1}{2}x^2 - x - 12$ | $f(x) = x^2 - x - 12$ |
| $f(x) = x^2 + 3x - 4$ | $f(x) = 0.4x^2 + 3.2x + 6.4$ |

5. Which function has zeros at x = -4 and x = 0?

A $5x^2 - 20x - 1$
B $4x^2 - 4x$
C $5x^2 + 20x$
D $2x^2 - 2x - 3$

6. Which function has exactly one zero?

A $x^2 + 10x - 1$
B $5(x - 6)(x - 3)$
C $x^2 + 3(x - 1)$
D $x^2 + 4x + 4$

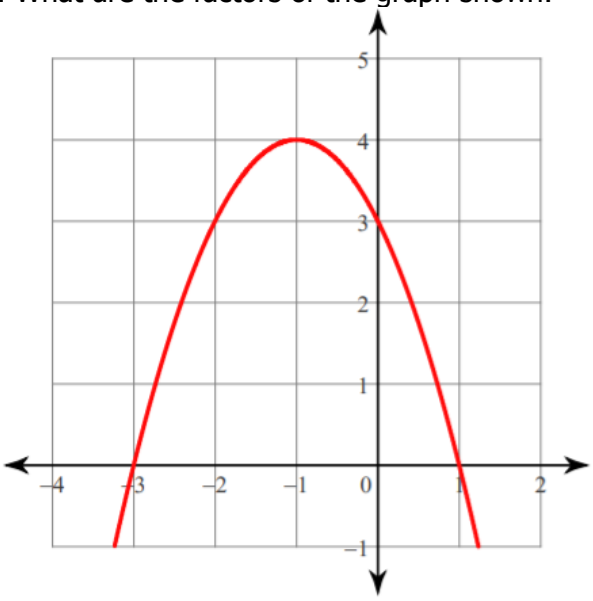
7. Identify one root for the function $f(x) = x^2 - 64$

8. Identify one root for the function
$f(x) = x^2 - 5x - 14$

Skill #1 □ I can identify the zeros and intercepts of a function.
□ Need more practice (IXL – B.1/B.12)

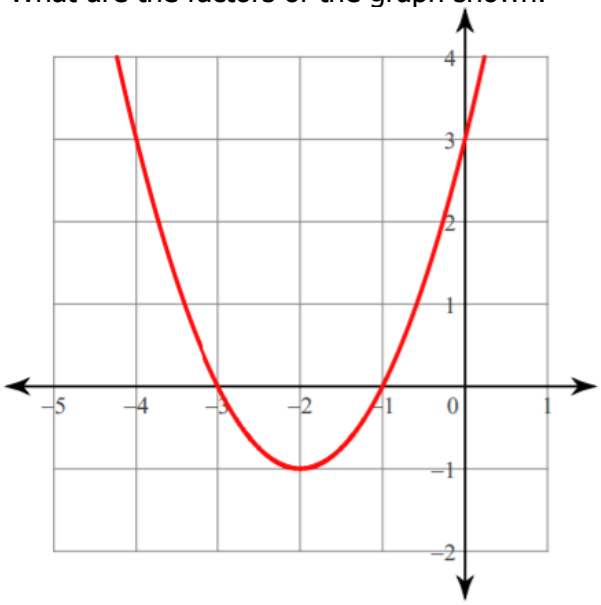
Skill #2 – Use the x-intercepts from the graphical representation of a quadratic function to determine and confirm its factors.

9. What are the factors of the graph shown:



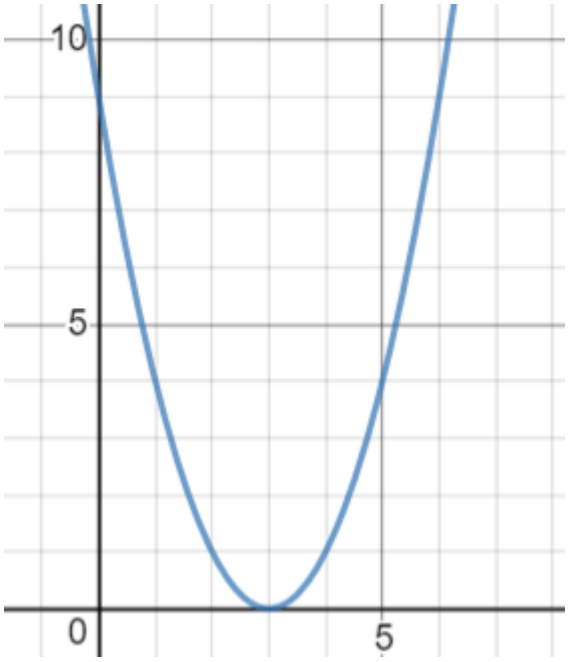
A $(x - 3)(x + 1)$
B $(x + 3)(x - 1)$
C $(x - 3)(x - 1)$
D $(x + 3)(x + 1)$

10. What are the factors of the graph shown:



A $(x - 3)(x + 1)$
B $(x + 3)(x - 1)$
C $(x - 3)(x - 1)$
D $(x + 3)(x + 1)$

11. What are the factors of the graph shown?



A $(x - 3)^2$

B $(x + 3)^2$

C $(x - 3)(x - 1)$

D $(x + 3)(x + 1)$

Skill #2 □ I can look at a graph and identify the factors of the equation.
□ Need more practice (IXL – B.1/B.12 )

Skill #3 – Determine an equation of the curve of best fit, using a graphing utility, given a set of data points, a graph, or a practical situation.

12. Match each equation of the curve of best fit beside the correct set of data:

| x | y |
|---|---|
| −5 | 10 |
| −2 | 5 |
| 1 | −3 |
| 2 | −6 |
| 4 | −8 |

| x | y |
|---|---|
| 0 | −34 |
| 3 | −26 |
| 7 | −28 |
| 10 | −142 |
| 12 | −194 |

| x | y |
|---|---|
| −7 | 65 |
| −3 | 18 |
| 4 | 10 |
| 7 | 39 |
| 11 | 100 |

$y = -2.4x^2 + 15.6x - 38.2$

$y = -2.14x - 0.4$

$y = x^2 - 1.95x + 3.2$

Skill #3 □ I can determine an equation of the curve of best fit.
□ Need more practice (IXL – CC.2 )