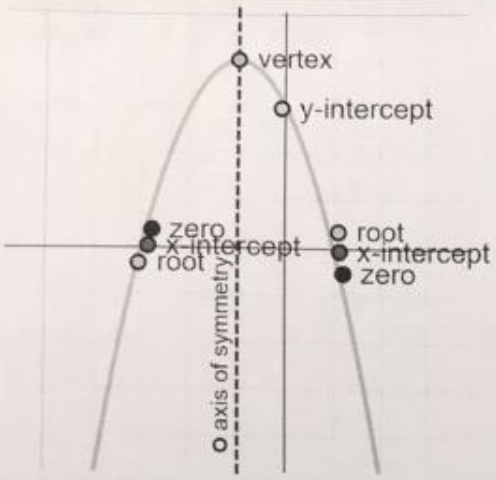
Algebra 1 – Unit 11 Guide

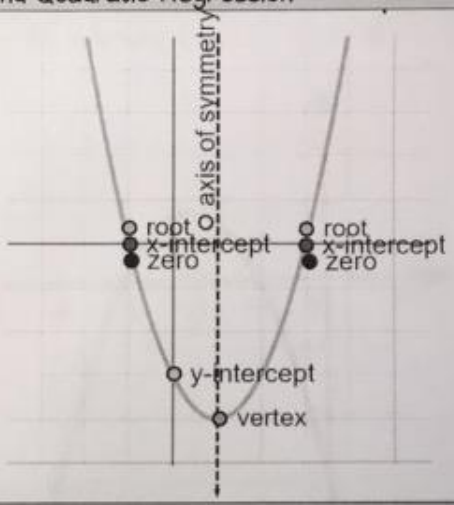
Characteristics of Quadratic Graphs and Quadratic Regression



Factors from x-intercepts

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

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



Factors from x-intercepts

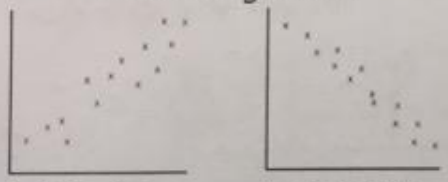
x-intercepts: (-1,0) and (3,0)

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

Quadratic Regression

Data sets may show:

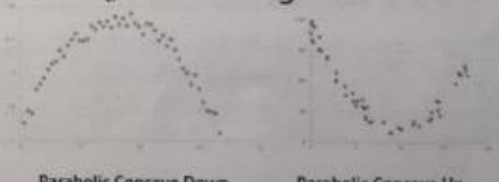
Linear Regression



Positive Correlation (Direct Variation)

Negative Correlation

Quadratic Regression



Parabolic Concave Down

Parabolic Concave Up

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

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

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

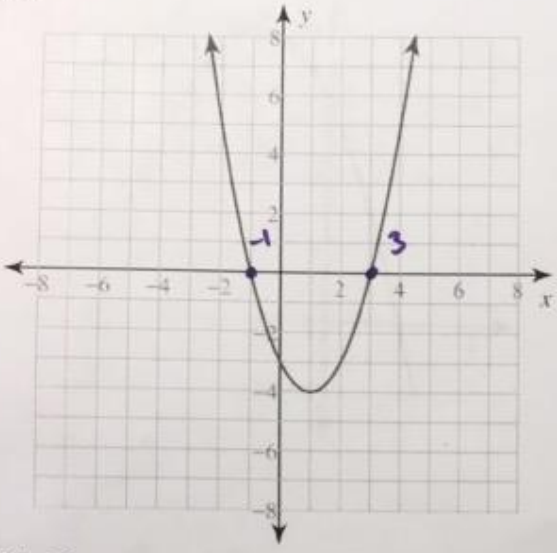
Use the PARAMETERS to write the equation.
Plug in the values for a, b, and c.

Algebra 1 – Unit 11 Study Packet

Characteristics of Quadratic Graphs and Quadratic Regression

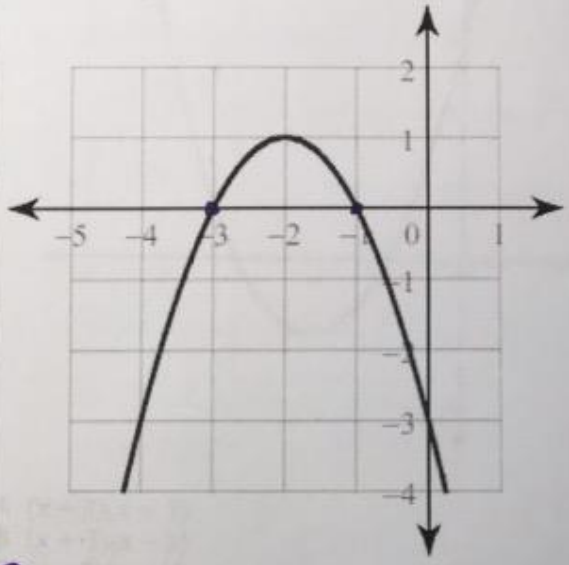
Skill #1 – Identify the zeros and intercepts of a function.

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 -OR- 8

(-8, 0) (8, 0)

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

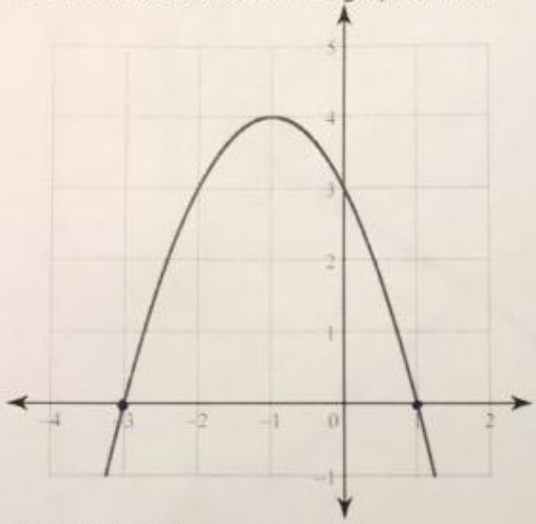
-2 -OR- 7

(-2, 0) (7, 0)

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

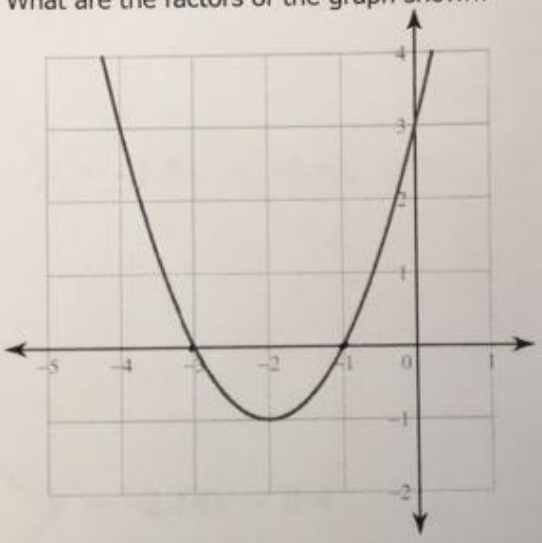
Skill #2 – Use the x-intercepts from the graphical representation of a quadratic function to determine and confirm its factors.

9. What are the factors of the graph shown:



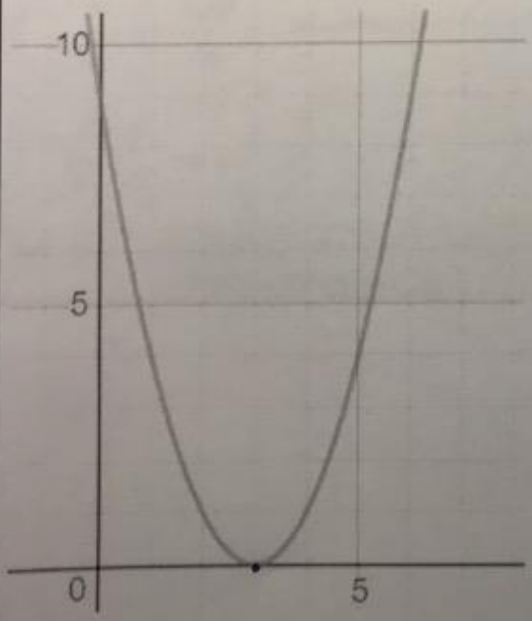
A $(x - 3)(x + 1)$
B $(x + 3)(x - 1)$
C $(x - 3)(x - 1)$
D $(x + 3)(x + 1)$

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)

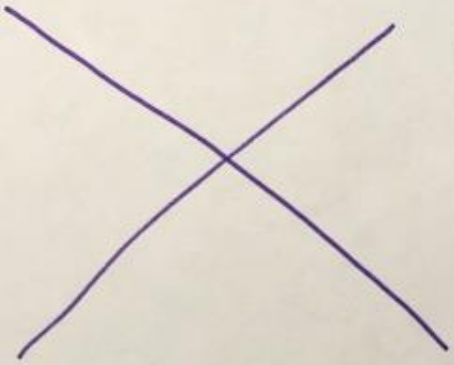
Skill #3 – Determine an equation of the curve of best fit, using a graphing utility, given a set of data points, a graph, or a practical situation.

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)