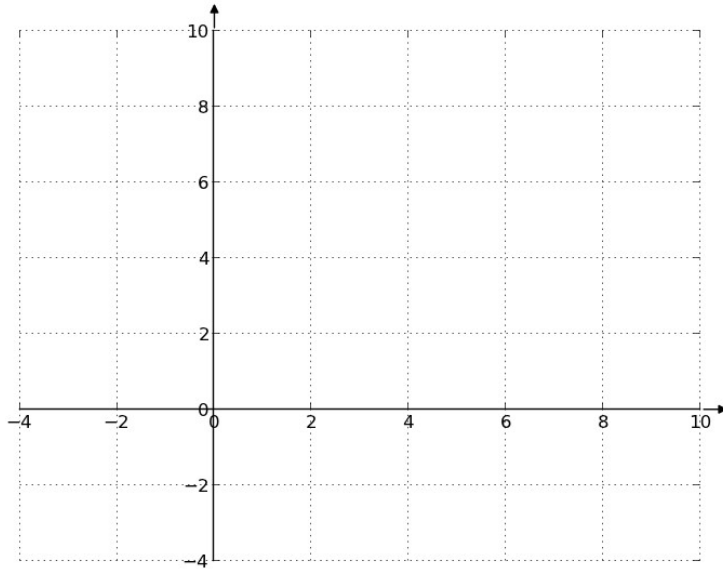


Name: _____

Unit 3 Rewrite – Quadratic Functions

K ___/10 **T** ___/9 **C** ___/7 **A** ___/15

1. a) Graph $f(x) = -(x+1)(x-3)$ (Also draw the AoS on your graph). **K/10**



b) Determine:

AoS is $x =$ _____.

Vertex is (_____, _____).

$y_{\text{int}} =$ (_____, _____).

Symmetric Partner of y_{int} :

(_____, _____).

Zeros are: (_____, _____) and

(_____, _____).

Skip this one

c) This parabola opens _____. The vertex contains a _____ (max or min?) value.

d) Re-write the function in standard form: $f(x) =$ _____

e) Re-write the function in vertex form: $f(x) =$ _____

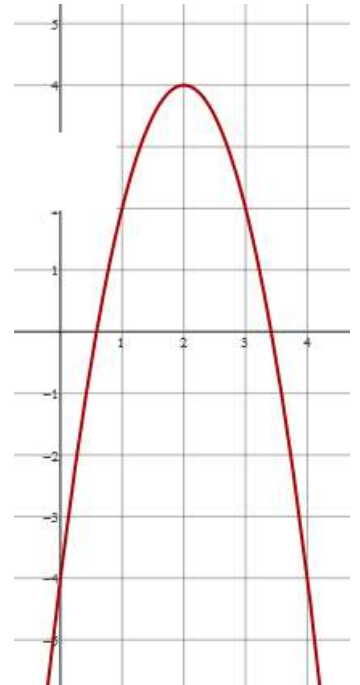
2. At a Toronto Maple Leafs game workers shoot T-shirts to the fans using a sling shot. The height of a T-shirt is modelled by the function $h(t) = -5t^2 + 20t + 1$ where $h(t)$ is in metres above the ice rink, and t is in seconds after the T-shirt is shot. Determine the maximum height a T-shirt could reach, and how long it would take to reach that maximum height. **T/3**

3. Write the equation for each function in any form you choose. (Show your work) **T/4**

a) Equation: $f(x) =$ _____
 $f(x)$ has zeros at $x = -3$ and at $x = 2$.
 $f(x)$ also passes through $P(1, 8)$

b) Equation: $g(x) =$ _____
 $g(x)$

Skip this one



4. Given the quadratic function $g(x) = -\frac{2}{3}(x-3)^2 - 2$ **state** how many zeros $g(x)$ has, with a reason. Note: you may not use the quadratic formula nor the discriminant. **T/2**

Skip this one

5. Simplify:

A/4

$$3\sqrt{2}(4\sqrt{6} - \sqrt{10}) - (5\sqrt{3} + 3\sqrt{20})$$

6. The height, $h(t)$, of a baseball, in metres, at time t seconds after it is tossed out of a window is modelled by the function $h(t) = -5t^2 + 20t + 15$.

A nefarious young girl shoots at the baseball with a paintball gun. The trajectory of the paintball is given by the function $g(t) = 3t + 3$.

Will the paintball hit the baseball? If so, when? At what height will the baseball be? **A/5**

7. Using algebraic techniques determine the zeros of the functions (if necessary leave answers in radical form. But, if you must use decimals, round to two decimal places):
- a) $f(x) = -2x^2 + x + 5$ b) $g(x) = 2(x-3)^2 - 20$ A/3,3

**Skip this one
(complete part a)**

9. Explain why a vertex is NOT considered a maximum or a minimum. C/2

10. Tell me **everything** you can about the given parabola. You may use words and/or numbers in your description. In fact, label *anything of importance*. C/5

