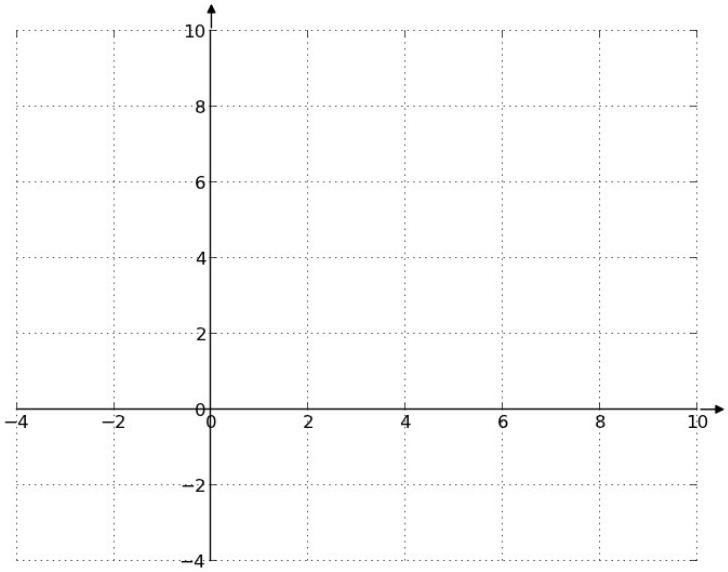
Name: _____

Unit 3 Practice Test – 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_{int} = (____, ____).

Symmetric Partner of y_{int} :
(____, ____).

Zeros are: (____, ____) and
(____, ____).

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**

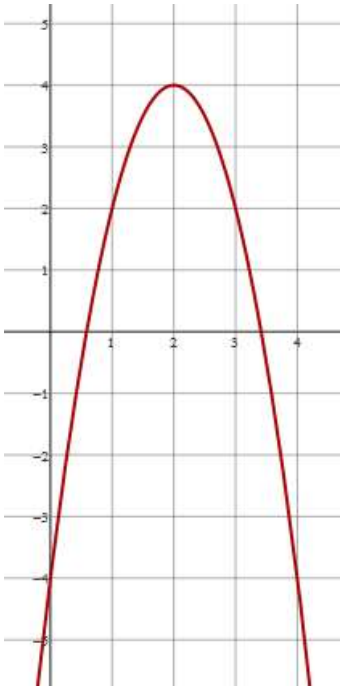
a) Equation: $f(x) =$ _____

$f(x)$ has zeros at $x = -3$ and at $x = 2$.

$f(x)$ also passes through $P(1,8)$

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

$g(x)$



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**

5. Simplify: **A/4**

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

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**

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**