

**Unit 3 PRACTICE Test: Quadratic Functions**

Name: \_\_\_\_\_

1. Given the function  $f(x) = -4(x+8)^2 - 6$  \_\_\_ 3K

a) State the vertex.

b) State the direction of opening.

c) State the y-intercept.

2. Create the quadratic equation which represents the following information:

a) vertex: at (-2,9) and goes through the point (3,6) \_\_\_ 3K

b) Zeros  $x = -10$  and  $x = 4$  and goes through the point (-6,-80) \_\_\_ 3K

3. Express each answer in simplified radical form:

a)  $5\sqrt{24} - 2\sqrt{54}$  \_\_\_ 3Kb)  $4\sqrt{3}(2\sqrt{12} - 5\sqrt{6})$  \_\_\_ 3K

4. Travis and Laura are rock climbing. Travis throws a spike to Laura. The function  $h(t) = -5t^2 + 20t + 120$  models the height of the spike in metres above the ground at time  $t$ . Laura is 135 m above the ground. Could Travis' throw reach Laura? Explain your answer. \_\_\_\_ 3A

5. A rectangle's length is 4 more than 3 times the width and the area of the rectangle is  $175\text{m}^2$ . Using quadratics, find the dimensions of the rectangle (meaning, guess and check is not an appropriate answer). \_\_\_\_ 4A

6. Using algebra, find the max/min value of  $f(x) = 6x^2 + 12x - 210$ . \_\_\_\_ 3A

7. Use the discriminant to determine how many zeros are in the function  $f(x) = 6x^2 - 15x + 12$  \_\_\_\_3T

8. Given  $f(x) = 3x^2 + 2kx - k$ , find the value(s) of  $k$  so that  $f(x)$  has only one zero. \_\_\_\_4T

9.  $f(x) = 2x^2 - x - 25$  and  $g(x) = 3x + 5$ . Determine the point(s) of intersection. \_\_\_\_6T