

Review for Second Exam Unit 1 Exam 1 (M 3204)

Date Due: _____ Exam Date: _____

1 For each quadratic function below identify:

- A) the form the equation is in
- B) vertex and type
- C) equation of the axis of symmetry
- D) domain and range
- E) horizontal and vertical translation in words
- F) vertical stretch factor and interpret what does it mean in relation to the graph
- G) coordinates of the y-intercept
- H) mapping rule

i) $y = 2(x - 6)^2 - 5$ *ii)* $y = -.5(x + 8)^2$ *iii)* $y = 8(x + 5)^2 - 11$

iv) $-3(y + 7) = (x - 2)^2$ *v)* $\frac{1}{2}y = (x + 6)^2$ *vi)* $\frac{5}{4}(y + 3) = (x + 8)^2$

vii) $y = -4x^2 + 32x + 1$ *viii)* $y = 2x^2 + 12x - 17$ *ix)* $y = -x^2 - 9x + 3$

In vii to viii, you must complete the square!

2 For each function find the mapping rule and use it to sketch the function with the base graph $y = x^2$. Please use appropriate tables and your own graph paper.

i) $y = .5(x - 8)^2 - 5$ *ii)* $3(y + 1) = (x - 4)^2$ *iii)* $y = -3x^2 - 6x + 1$

3 A ball is kicked into the air and its path can be described by a quadratic function. It takes 3 seconds to reach a maximum height of 60 m. After 6 seconds, the ball touches the ground. Determine a quadratic function in standard transformational form. Use the function to determine the height of the ball after 3.5 seconds.

4 A rocket is fired into the air from a platform 2 m above ground level. After 4 seconds the rocket reaches a maximum height of 1200 m. Determine a quadratic function in standard form and use it to determine the height of the rocket after 2 seconds.

5 A tennis ball is hit into the air and its path can be describes by the function $h(t) = -5t^2 + 60t$ where t is time in seconds and H(t) is the height of the ball in metres. Determine ALEGEBRAICALY when was the ball at its maximum height and what was the maximum height. (Can't use tables here!)