

# Exam 3 Study Guide

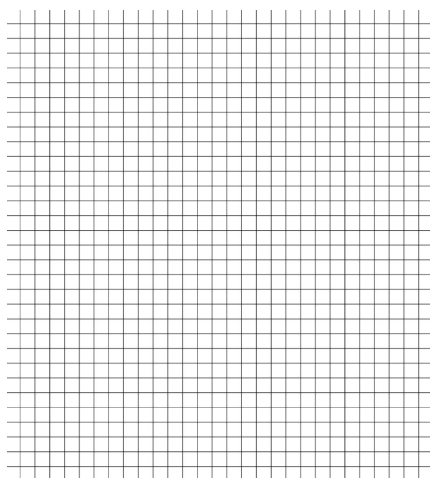
Name \_\_\_\_\_

Answer the questions in the spaces provided. Feel free to use the back of your test for scratch work

1. Identify the vertex and graph::

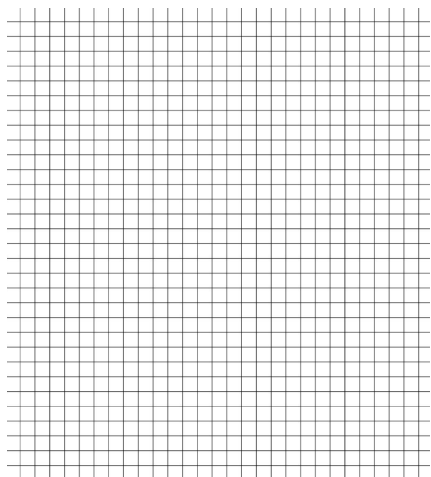
(a)

$$f(x) = -x^2 + 3x$$



(b)

$$g(x) = (x + 5)^2 - 9$$









2. Write the following equations in vertex form:

(a)  $f(x) = 3x^2 + 12x + 9$

$$g(x) = -x^2 + 2x - 2$$

3. A farmer is making a pen for his chickens. He decides he's going to build it next to his barn, so he only needs to make 3 sides. Assuming he has 360ft of fencing:

- (a) What are the dimensions of the sides of the fence?
- (b) What is the maximum area inside the pen?







4. Determine the x-intercepts and y-intercepts of the following functions:

(a)  $f(x) = x^3 + 3x^2 - 18x - 54$

$$g(x) = x^3 + 2x^2 - 35x$$

5. Compute the following, then **label the quotient and remainder**:

(a)  $\frac{x^3 + 2x^2 - 23x - 60}{x^2 - x - 20}$

$$\frac{x^2 + 7x + 27}{x + 4}$$







6. Given the functions below, using the remainder theorem calculate:

$$f(x) = (x - 2)^2$$

$$g(x) = -x^2 + 7x + 12$$

(a)  $f(1)$

$g(-3)$

(b)  $f(-5)$

$g(6)$







7. Using the graphs on the next page, graph the following functions:

**Don't forget to label your graphs**

(a)  $f(x) = (x - 1)(x - 1)(x - 4)(x + 4)$

$$j(x) = (1 - x)(x + 5)(4x^2 - 8x + 4)$$

