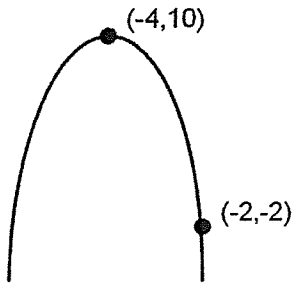
# Algebra 2 Final Exam Review Fall 2015

From Chapter 5

1. Write the equation of this parabola in Vertex Form: $y = a(x-h)^2 + k$




Problems 2 and 3: For each quadratic answer the following:

a) State the equation for the line of symmetry
b) State the coordinates of the vertex
c) State the y-intercept
d) Tell if the parabola has a maximum or a minimum.

2. $y = -2x^2 - 16x + 13$

3. $y = 3(x-1)^2 + 6$

4. Find ALL EXACT solutions, both real and imaginary, by factoring:

a) $6x^2 - 15x = 0$ b) $2x^2 + 6x - 20 = 0$ c) $2x^2 + x - 10 = 0$ d) $2x^3 + 7x^2 - 18x - 63 = 0$

5. Find all real and imaginary solutions using square roots:

a) $5 + 3x^2 + 57 = 8$ b) $(x+3)^2 + 24 = 8$

6. Find all real and imaginary solutions using the quadratic formula. Give all real solutions rounded to the nearest hundredth and simplify all imaginary solutions.

a) $4x^2 + 20x - 1 = 0$ b) $x^2 - 4x + 29 = 0$

7. An object is shot into the air from the top of a 30 foot building. The following equation models the height of the object as a function of time. $h(t) = -16t^2 + 200t + 30$

a) Find the time to reach it's maximum height.
b) Find the maximum height.
c) Find the time to return to the ground.
d) Find the time it takes to reach a height of 100 feet.

8. Find each product: a) $(2+4i)(5-3i)$ b) $(2+7i)^2$ c) $(6+7i)(6-7i)$

Chapter 6 1. Find all real and imaginary solutions by factoring.

a) $2x^5 - 10x^3 - 72x = 0$ b) $3x^3 - 2x^2 + 18x - 12 = 0$ c) $5x^5 - 80x = 0$

2. State the Degree and Leading Coefficient of each polynomial.

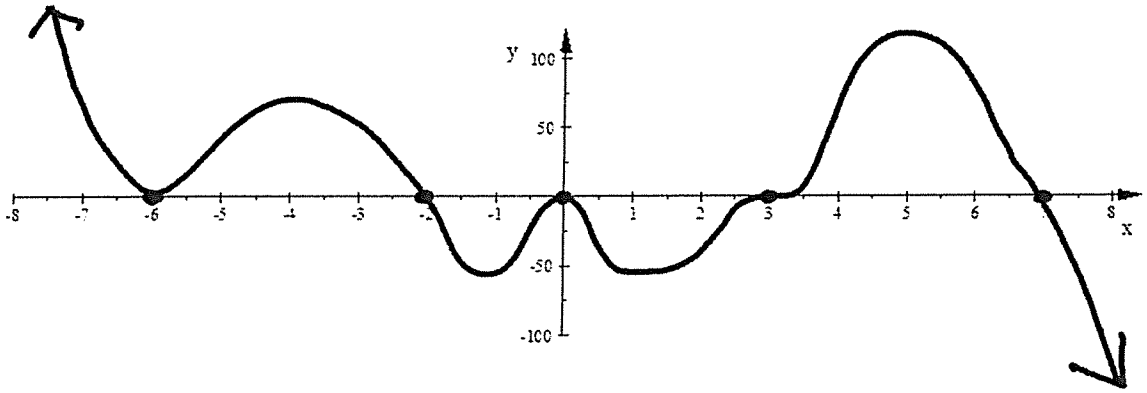
a) $5x^3 - 3x^2 + x^5 - 9x + 12$ b) $-10x^2(5x+6)^2(2x-1)^3(x+3)$

3. State the end behavior of each polynomial.

a) $y = 5x^4 + 6x^3 - 7x + 1$ b) $y = -x(x+6)^2(x-7)^2(x+4)$

c) $y = -2x^5 + 8x^4 - 9x^2 + 10x$ d) $y = x^3(x+3)^2(x+7)(x-1)$

4. Write the equation of the polynomial shown in the graph.




5. Find each quotient. You can leave a remainder any way you wish.

a) $\dfrac{3x^4 - 8x^3 + 7x^2 + 4x - 9}{x - 2}$ b) $\dfrac{8x^3 + 22x^2 - 25x + 3}{4x - 3}$

# Algebra 2 Final Exam Review ANSWERS Fall 2015

## Chapter 5

1. $y = -3(x+4)^2 + 10$
2. a) LOS: $x = -4$ b) Vertex $(-4, 45)$ c) $y - int = 13$ d) Max
3. a) LOS: $x = 1$ b) Vertex $(1, 6)$ c) $y - int = 9$ d) Min
4. a) $x = \frac{5}{2}, 0$ b) $x = 2, -5$ c) $x = 2, -\frac{5}{2}$ d) $x = \pm 3, -\frac{7}{2}$
5. a) $x = \pm 3i\sqrt{2}$ b) $x = -3 \pm 4i$
6. a) $x = -5.05, 0.05$ b) $x = 2 \pm 5i$
7. a) 6.25 sec b) 655 ft c) 12.65 sec d) 0.36 and 12.14 sec
8. a) $22 + 14i$ b) $-45 + 28i$ c) 85

## Chapter 6

1. a) $x = 0, \pm 3, \pm 2i$ b) $x = \pm i\sqrt{6}, \frac{2}{3}$ c) $x = 0, \pm 2, \pm 2i$
2. a) Degree=5, LC = 1 b) Degree=8, LC= −200
3. a) ↖, ↗ b) ↙, ↘ c) ↖, ↘ d) ↙, ↗
4. $y = -x^2(x+6)^2(x+2)(x-3)^3(x-7)$
5. a) $3x^3 - 2x^2 + 3x + 10$ $R = 11$ b) $2x^2 + 7x - 1$