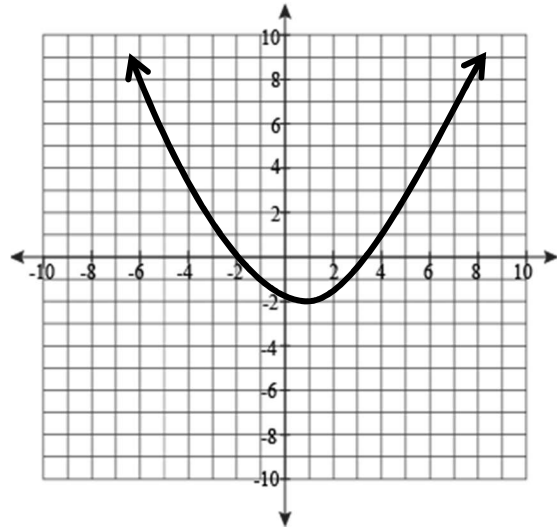
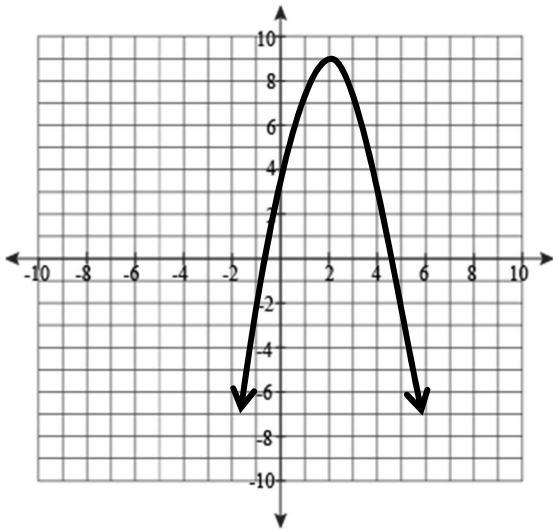


Algebra 2 Semester 2 Study Guide for Final Exam

4LT1: Identify and graph quadratic functions (4-1 Pg. 194)

- 1.) Identify the vertex, axis of symmetry, maximum or minimum, and domain and range of the function below



- 2.) Give the transformation of the parent function to each of the functions below:

a.) $f(x) = x^2$ to $f(x) = (x - 6)^2 + 8$

b.) $f(x) = x^2$ to $f(x) = (x + 4)^2 - 10$

4LT2: Model data with quadratic functions (4-3 Pg. 209)

- 3.) Find the equation of the parabola that passes through the set of points:

a.) $(0, 0)$, $(1, -2)$, and $(-1, -4)$

b.) $(-2, 9)$, $(-4, 5)$, and $(1, 0)$

4LT3: Find common and binomial factors of quadratic expressions. (4-4 Pg. 216)

- 4.) Write each of the quadratic equations below in standard form:

a.) $f(x) = (5x + 2)(x + 8)$

b.) $(x + 4)(x - 7)$

- 5.) Factor each of the quadratic expressions below:

a.) $x^2 + 5x + 4$

b.) $x^2 - 5x - 14$

c.) $2x^2 + 13x + 11$

d.) $4x^2 + 15x + 9$

4LT4: Solve quadratic equations by factoring and graphing (4-5 Pg. 226)

- 7.) Give the solutions for the quadratics below:

a.) $x^2 + 15x + 50$

b.) $3x^2 + 10x + 8$

c.) $x^2 + 7x = 18$

d.) $2x^2 + 8x = -8$

4LT5: Solve quadratic equations using the quadratic formula (4-7 Pg. 240)

- 9.) Determine the discriminant for each of the quadratic equations below:

a.) $y = 5x^2 + 4x - 10$

b.) $y = 2x^2 + 3x + 12$

4LT6: Identify, graph, and perform operations with complex numbers (4-8 Pg. 248)10.) Simplify each expression and write it in terms of i

a.) $\sqrt{-4}$

b.) a.) $4 + \sqrt{-5}$

c.) a.) $\sqrt{-10} + 9$

11.) Simplify each expression below:

a.) $(10 + 13i) - (12 - 7i)$

c.) $4 + 10i + 15i - 9$

c.) $(8 + 3i) + (2 - 5i)$

12.) Solve each quadratic below (give the complex answers in terms of i)

a.) $x^2 + 2x + 3 = 0$

b.) $x^2 - 4x + 5 = 0$

4LT7: Solve and graph systems of equations involving quadratic functions (4-9 Pg. 258)

13.) Give the solution to the system of equations below:

a.)
$$\begin{cases} y = -x^2 - x + 6 \\ y = x + 3 \end{cases}$$

b.)
$$\begin{cases} y = x^2 - 2x + 3 \\ y = x + 1 \end{cases}$$

5LT1: Classifying and describing polynomial functions from their end behavior. (5-1 Pg. 280)

14.) Classify the polynomial equations below:

a.) $y = 7x^2 + 5x^3 - 8x^5 + 7$

b.) $y = 6x + 10x^2 + 2x^2$

c.) $y = 4x^3 - 10x^4 + x$

15.) Give the end behavior of each polynomial equation:

a.) $y = 10x^4 - 2x^2 + 19$

b.) $y = 6x^2 - 9x^3 + 10$

c.) $y = 5x^2 + 10x + 3x^5$

5LT2: Solve Polynomials by graphing (5-2 Pg. 28)

16.) Give the solution of each polynomial below:

a.) $y = 4x^3 + 12x^2 + 8x$

b.) $y = 6x^3 - 3x^2 - 2x$

c.) $y = 7x^4 + 3x^3 - 2x^2$

18.) Give all of the solutions below that are greater than zero

a.) $y = 10x^3 + 60x^2 - 50x$

b.) $y = 10x^3 - 5x^2 - 16x + 8$

5LT3: Solve Polynomials by factoring (5-3 Pg. 296)

19.) Give the factored form of the polynomials:

a.) $y = 7x^3 + 84x^2 + 140x$

b.) $y = 6x^3 + 15x^2 + 8x + 20$

20.) What are the solutions (both real and complex) for the polynomials:

a.) $8x^3 + 88x^2 + 80x = 0$

b.) $32x^3 + 8x^2 + 16x + 4 = 0$