

Name: \_\_\_\_\_ Period: \_\_\_\_\_ Date: \_\_\_\_\_

1.1-1.8 Review

*Each question should be done without a calculator unless there is a 'C' next to the number.*

1. Check for y-axis, x-axis or origin symmetry.

a)  $xy^{-3} = 5$

b)  $y = x^3(6x - x^3) - 5$

2. Solve each equation for x.

a)  $\frac{14}{x} + \frac{1}{4}(x+9) = 13 - x$

b)  $\frac{18}{x^2 - 9x} + \frac{10}{x} = \frac{2}{x-9}$

c)  $2b - \frac{4a}{x} = \frac{1}{3}(12a - 3)$

d)  $|x^2 - 3x| = 3x - 5$

e)  $\sqrt{x+10} - \sqrt{x-6} = 2$

f)  $\sqrt{x+9} + x = 3x - 10$

g)  $1 = 64x^3$

h)  $(x^2 - 13x + 6)^{3/2} = 216$

i)  $x^4 - 26x^2 = 27$

j)  $6x^{1/2} - 11x^{1/4} - 35 = 0$

3. Find all real solutions by extracting square roots.

a)  $(x-2)^2 = (x+10)^2$

b)  $8 = (x-5)^2$

4. Find all real solutions by completing the square.

a)  $2x^2 + 5x + 2 = x - 2$

b)  $14 + 12x = 9x^2$

5C. Solve each quadratic using the quadratic formula and/or a substitution.

a)  $8(x-3)^2 + 8(x-3) = 14$

b)  $3x - 5x^2 = 1$

6. Write a quadratic that has the given solutions in standard form.

a)  $x = 6i, -6i$

b)  $x = 5/2, 7/2$

7. Find all values for  $b$  that will give the quadratic a) 2 real solutions b) 1 real solution and c) 2 imaginary solutions.

a)  $6x^2 - 2x - b = 0$

b)  $4x - bx^2 + 10 = 8 - x$

8. Find all real  $x$  values that satisfies each inequality. Put your answers in interval notation and as a graph.

a)  $\left|4 - \frac{2}{3}x\right| \leq 16$

b)  $|3 - 4x| > 7 - x$

c)  $(x - 4)^2 - 16 > 20$

d)  $4x^5 + 17x^3 + 4x < 0$

e)  $-3x^2 + x - 4 > 0$

f)  $2x^2 - 20x \leq -50$

g)  $x^2 + 6x + 4 \geq 0$

h)  $x^3 + x^2 - x < 1$

i)  $\frac{4}{x-3} \leq \frac{3}{x+5}$

j)  $\frac{x(x+2)^3(x-5)^4}{(x-3)^2x} \geq 0$

9. Simplify

a)  $(3i - 5)(2i + 3)$

b)  $\frac{5}{2-3i}$

c)  $(4i + 3)^2$

10C. The Bow Tie Movie Theatre in Ridgewood charges \$500 to rent out a room to watch a movie. A Queen (the band) fan club decides to rent out the entire theatre to see the premier of Bohemian Rhapsody. When 10 more people join group, the price per person drops by \$2.50. How many people will be at the premier?

11C. A family drives 720 miles to their beautiful vacation house in Cleveland. Because of Arbor Day traffic, their trip home took 3 hours longer than their trip to Cleveland and their average speed decreased by 12 mph. Determine their average speed to Cleveland and back (two separate answers).

12C. Two cars start at a given point and travel in the same direction at average speeds of 40 mph and 55 mph. How much time must elapse (in minutes) before the two cars are 8 miles apart?

13C. Students are traveling in two cars to a football game 135 miles away. The first car leaves on time and travels at an average speed of 45 mph. The second car starts 30 minutes later and travels at an average speed of 55 mph. How long will it take the second car to catch up to the first car? Will the second car catch up to the first car before the first car arrives at the game?

14C. How many gallons of 80% acid must be mixed with 5 gallons of 25% acid in order to make 50% acid?

15C. How many gallons of water must be mixed with 8 L of 50% salt water to get 20% salt water?