



**Semester 1:
Review**

1. Solve and graph the solution to $-4(1 + x) \leq 2x$ on a number line.

2. Find the equation of the line having the same slope as $2x - 3y = 17$ and passing through $(-1, 2)$.

3. Solve and graph the solution to $-15 \leq 5x < 45$ on a number line.

4. Four times the supplement of an angle is still only half of the angle. What is the angle?

*5. Solve $|3x + 1| \geq 17$ and graph the solution on a number line.

6. Consider lines A, B, C, and D below. Which has a positive slope? _____
Which has a negative slope? _____ Which has a slope of 0? _____
Which has an undefined slope? _____



7. Find the equation of the line passing through $(4, 9)$ and $(-2, -3)$.

8. Solve the following system of equations by elimination.

$$2p - 3q = 1$$

$$5p + 2q = 0$$

9. Solve the following system of equations by substitution.

$$x + y - 4 = 0 \quad \text{and} \quad x - 9 + 2y = 0$$

10. Ten times the number of nickels is one more than the number of dimes. The total value of the coins is \$7.25. How many of each is there?

11. Use a graphing calculator to produce the solution to this system of linear equations. Sketch the display of the calculator.

$$y = -5x + 111 \quad \text{and} \quad y = x + 53$$

12. Determine algebraically if $(-7, 1)$ is part of the solution of $2x - y \geq 5$.

13. Factor $4j^2 - 9k^2y^2$

14. Sketch the solution to $2x - y > 5$ and $x + y + 1 \geq 0$.

15. Factor $x^2 + 9x - 22$

16. Factor $6x^2 - 13xy + 5y^2$

17. Multiply $(4x - 1)(3x + 2)$

18. Solve by factoring $3x^2 - 27 = 0$

19. Simplify $\frac{10y}{x^{-5}} \left(\frac{5x^2}{y^{-3}}\right)^{-2}$

20. Simplify $\sqrt[3]{\frac{27}{16}}$

21. Simplify $\sqrt[4]{x^9y} \sqrt[4]{y^3x}$ and leave in simplest radical form.

22. Express $13^{3/5}$ in simplest radical form.

23. Express $5x \sqrt[3]{xz^6}$ in simplest exponential form.

24. Solve $(x - 3)^{1/3} = 2$

25. Solve $(4x - 2)^{3/5} = 0$

26. Solve $\sqrt{2x + 3} + 4 = 0$

27. Solve $7x^2 - 14 = 0$ by taking the square root.

28. How many solutions are there to $x^5 + 6x^7 - 2x + 1 = 0$?

29. Derive the quadratic formula.

30. Solve $3x^2 - 6x + 2 = 0$ by completing the square.

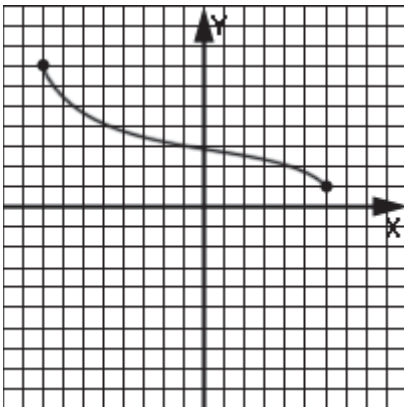
31. Solve $3x^2 - 6x + 2 = 0$ using the quadratic formula.

Unit 7 problems start here:

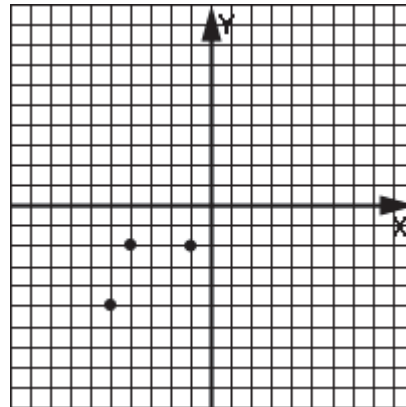
32. Is $\{(1, 2), (-1, -2), (2, 1), (1, -2)\}$ a function?

33. Find $f(-2)$ where $f(x) = x^2 - 4x + 5$.

34. Find the domain and range of this relation. Is it a function?



35. Complete this function so that it will be an even function.



36. Divide the following terms into two separate groups, one associated with the x-axis and the other with the y-axis: { independent, dependent, vertical-axis, horizontal-axis, range, domain, input, output, h, k, ordinate, abscissa, cos, sin }

37. In the function $g(a) = 3a^2 - 2a + 9$ which is the dependent and which is the independent variable?

38. What requirement concerning symmetry is necessary in order that a function be even?

Unit 8 problems start here:

39. For the quadratic function $y = f(x) = (x - 12)(x + 2)$ find the following information and graph & label the parabola:

Vertex:	Axis of Sym:	Min or Max:	Domain:
Range:	Y-intercept:	Roots:	

40. Find the equation of a parabola with vertex (3, 8) and passing through (1,-2).

41. Use a graphing calculator to find the roots of $y = 4x^2 - 3x - 5$.

Unit 9 problems start here:

42. Fill in the right table so that it represents the inverse function of the left table.

x	f(x)
-8	4
2	-1
6	-1
15	-3
-9	3

x	$f^{-1}(x)$

43. Fill in the right table so that it represents the left table translated 4 units up and 2 units to the left.

x	f(x)
-2	0
3	-2
5	-6
11	-8
12	6

x	f(x)

44. Find $f^{-1}(x)$ when $f(x) = (1/7)x + 2$.

45. Determine if $f(x) = 2x - 5$ and $g(x) = (1/2)x + 3/2$ are inverses of each other.

Miscellaneous problems start here:

46. Without finding the roots, determine the nature of the roots of $2x^2 - 6x + 5 = 0$.

47. What must be the value(s) of k so that $x^2 + 8kx + 1$ will have two different real zeros?

48. Perform a binomial expansion on $(2p - 5q^2)^4$.