

Algebra Review - prep for Honors Algebra II

SOLVING EQUATIONS

SOLVE each of the following equations. Show all work.

1.  $-\frac{3d}{4} + 5 = 7$

1.  $d = -8/3$

2.  $\frac{1}{2}(4x + 12) = 6(x - 1)$

2.  $x = 3$

3.  $\frac{5n+1}{8} = \frac{3n-5}{4}$

3.  $n = 11$

Solve for x.

4.  $\frac{x-3}{6} + 3 = a$

4.  $x = 6a - 15$

FUNCTIONS, EQUATIONS & GRAPHS

State the DOMAIN and RANGE of each relation. Then determine if it is a function.

5.  $\{(-30, 40), (0, 40), (30, 20), (20, 0)\}$

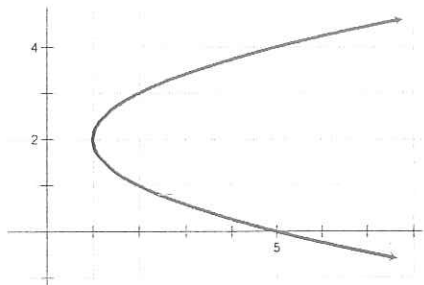
Domain:  $\{-30, 0, 20, 30\}$

Range:  $\{0, 20, 40\}$

Function? yes

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6. Does the graph below represent a FUNCTION? Explain.



Domain:  $x \geq 1$

Range:  $\mathbb{R}$

Function? NO

Given the FUNCTIONS  $f(x) = 2x - 3$  and  $g(x) = 2 - x + 2x^2$ , evaluate the following:

7.  $f(-5)$

7. -13

8.  $g(\frac{1}{2})$

8. 2

9. If  $f(x) = -3x + 7$  and  $g(x) = -7x + 3$ , what is the value of  $f(-3) - g(3)$ ?

9. 34

10. Find the EQUATION OF THE LINE containing the points (7, -1) and (-2, 4).

10:  $y = -\frac{5}{9}x + \frac{26}{9}$

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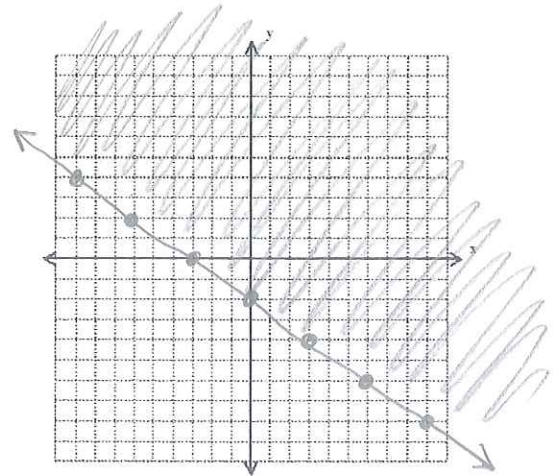
11. Find the X and Y INTERCEPTS of  $6x + 2y = 12$ .

11.  $\frac{(0,6) \quad (2,0)}{\downarrow \quad \quad \downarrow}$   
y-int      x-int

12. Write the equation of the line in STANDARD FORM:  $y = -\frac{3}{5}x + 3$

12.  $\underline{3x + 5y = 15}$

13. Graph the INEQUALITY:  $2x + 3y \geq -6$



### LINEAR SYSTEMS:

Solve each System of Equations using SUBSTITUTION or ELIMINATION.

14. 
$$\begin{cases} 4p + 2q = 8 \\ q = 2p + 1 \end{cases}$$

14.  $\frac{p \quad q}{(3/4, 5/2)}$

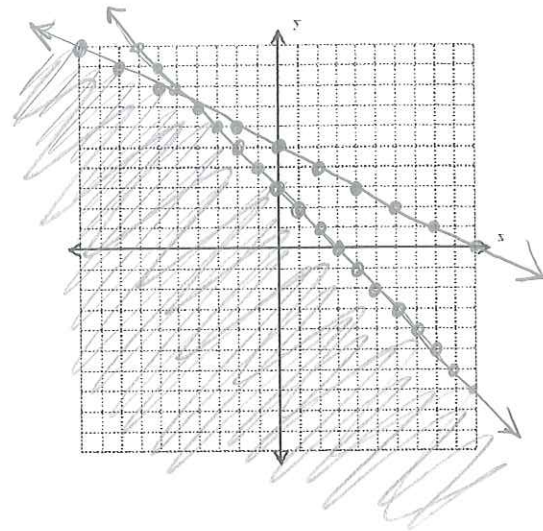
15. 
$$\begin{cases} 2a + 3b = 12 \\ 5a - b = 13 \end{cases}$$

15.  $\frac{a \quad b}{(3, 2)}$

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Graph the solution of the SYSTEM OF INEQUALITIES.

$$16. \begin{cases} x + 2y \leq 10 \\ x + y \leq 3 \end{cases}$$



## EXPONENTS & EXPONENTIAL FUNCTIONS:

Simplify each expression. Use only POSITIVE EXPONENTS.

17.  $(2x^3y^7)^{-2}$

18.  $\frac{12x^5y^3}{4x^{-1}}$

17.  $\frac{1}{4x^6y^{14}}$

18.  $3x^6y^3$

19.  $\left(\frac{r^{-7}b^{-8}}{t^{-4}w}\right)^0$

19.  $1$

Simplify each RADICAL EXPRESSION. Answers should be in simplest radical form.

20.  $\sqrt{18}$

21.  $\sqrt[3]{216}$

22.  $\sqrt{\frac{3}{15}}$

20.  $3\sqrt{2}$

21.  $6$

22.  $\frac{\sqrt{5}}{5}$

23.  $4\sqrt{b^5}$

24. Express in Radical Form:  $m^{\frac{1}{3}}$

23.  $4b^2\sqrt{b}$

24.  $\sqrt[3]{m}$

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## POLYNOMIALS & FACTORING:

Simplify.

25.  $(5x^2 - 3x + 7x) + (9x^2 + 2x^2 + 7x)$

25.  $\underline{16x^2 + 11x}$

26.  $(3x - 5)(2x + 7)$

27.  $(8r - 5s)^2$

26.  $\underline{6x^2 + 11x - 35}$

27.  $\underline{64r^2 - 80rs + 25s^2}$

FACTOR each polynomial completely.

28.  $x^2 - 10x + 24$

29.  $14y^2 + 7y - 21$

28.  $\underline{(x-6)(x-4)}$

29.  $\underline{7(2y+3)(y-1)}$

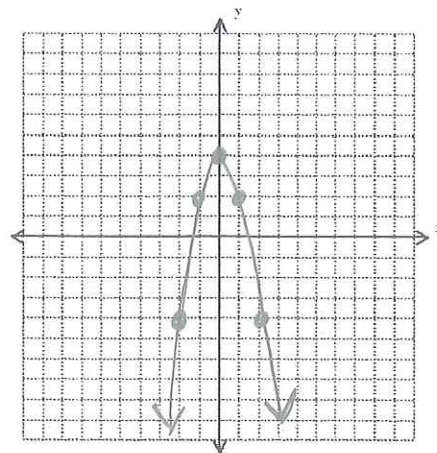
30.  $4x^3 + 12x - 28$

30.  $\underline{4(x^3 - 3x - 7)}$

## QUADRATIC FUNCTIONS:

Graph the quadratic function:

31.  $y = -2x^2 + 4$



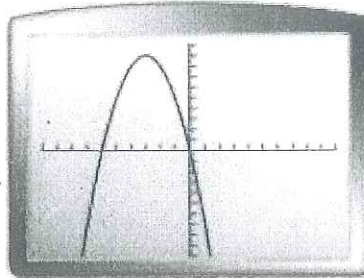
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Find the equation for the AXIS OF SYMMETRY and the coordinates of the VERTEX for each graph.

32.  $y = 2x^2 + 4x - 1$

AOS:  $X = -1$       Vertex:  $(-1, -3)$

33.



AOS:  $X = -3$

Vertex:  $(-3, 9)$

Solve the quadratic equation using SQUARE ROOTS:

34.  $5x^2 - 20 = 0$

34.  $X = \pm 4$

SOLVE each Quadratic Equation by FACTORING.

35.  $x^2 - 16 = 0$

35.  $X = \pm 4$

36.  $2k^2 + 22k + 60 = 0$

36.  $K = -6$   
 $K = -5$

Solve the quadratic equation using the QUADRATIC FORMULA:

37.  $2x^2 - 3x - 5 = 0$

37.  $X = 5/2$   
 $X = -1$

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### RADICAL EXPRESSIONS & EQUATIONS:

Simplify each expression.

38.  $5\sqrt{8} + 2\sqrt{72}$

39.  $-\sqrt{12}(4 - 2\sqrt{3})$

38.  $22\sqrt{2}$

39.  $-8\sqrt{3} + 12$

Solve the RADICAL EQUATION:

40.  $\sqrt{2b} + 4 = 8$

40.  $b=8$



