

Welcome to Honors Algebra 2!

The problems in this packet cover the necessary prerequisite concepts you'll need for Honors Algebra 2. In order to succeed in this course, it's crucial that you're able to recall and apply the skills you've learned in previous math classes. In order to prepare for the rigor of this course, you will need to be familiar with the topics in this packet prior to the start of the school year. I will not spend a large amount of time reviewing these topics, as they are prerequisite skills.

These FULLY COMPLETED problems, with all work shown, are **due** on the first day of class in August. You may seek help from any source (friends, tutors, online resources, etc.), but it's important that you understand how to solve each problem and can explain your process. You'll be expected to successfully solve similar problems independently when we return to class and will be assessed on these skills.

If you misplace your packet, you can find it posted on the DCHS website → Student Information → Summer Homework → Mathematics

I look forward to working with you!

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Read and follow all directions carefully, as points will be deducted for not following directions. It is good practice to reread the problem and its directions after you have solved it to make sure that you haven't missed anything. Show all of your work on separate sheets of paper. If no work is shown, no credit will be earned even if the answer is correct.

Simplifying Expressions

Simplify the expressions by combining like terms.

1) $6x - x$

2) $9x - (2x - 7x)$

3) $-(5x - 6y) + 3(4y - 10x)$

4) $-x^2 + y^2 - \frac{x^2}{3}$

5) $\left(\frac{x}{3}\right)^2 + 2x^2 + x$

Evaluating Expressions

Evaluate the expressions for the given value of the variable.

6) $-x - 1 + x + 2x;$
 $x = 3$

7) $6x^3 - 5x^2; x = -3$

8) $x^2 + 9; x = \sqrt{7}$

9) $6x + 9y - 5 + 8y;$
 $x = 3 \quad y = -4$

10) $10(1.3)^x; x = 4$

11) $\frac{4x+2(x-3)}{x+8}; x = -6$

Solving Linear & Quadratic Equations

Solve each equation.

12) $12x + 9 = 9 - 3x$

13) $24 - 6x = 0$

14) $4(x - 6) = 2x$

15) $x^2 = 36$

16) $4x^2 - 5 = 31$

17) $\sqrt{x} + 9 = 12$

Isolating a Variable

Solve each formula for the indicated variable.

18) $h = \frac{2(v-s^2)}{s}$; for v

19) $\frac{9}{5}C + 32 = F$; for C

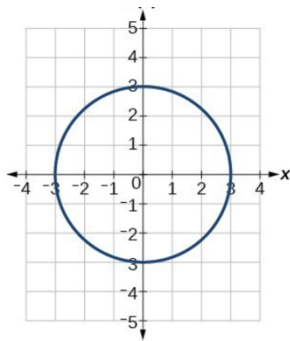
Function Notation

Determine if each relation is a function. If it isn't a function, give the reason:

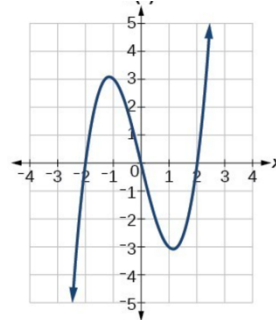
20) $\{(3, 4), (4, 5), (4, 6), (6, 7)\}$

21) $\{(2, 3), (3, 3), (4, 5), (5, 7)\}$

22)



23)



Find $f(-6)$ for each function.

24) $f(x) = 3x^2 + 2x - 4$

25) $f(x) = \frac{2}{x}$

26) $f(x) = x^3 - \frac{x}{2}$

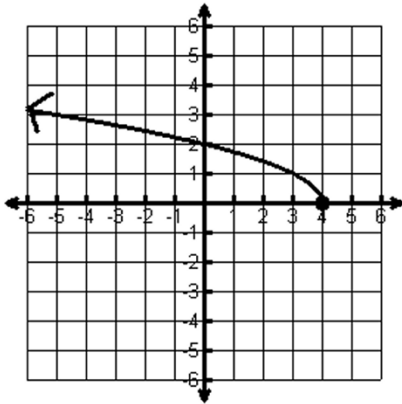
Solve for x if:

27) $f(x) = 6$ and $f(x) = 5x + 13$

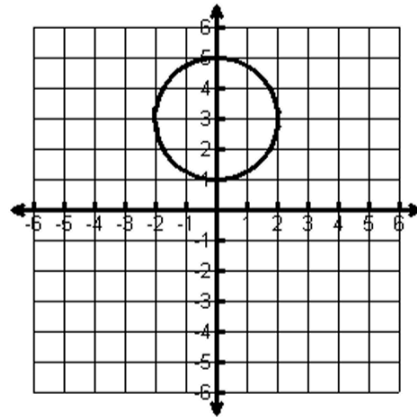
Domain & Range

Identify the domain and range of each relation.

28)



29)



Linear Equations

Find the equation, in point-slope form, of the line with the given information.

30) Slope = 5 and passes through (2, -3)

31) Passes through (3, 2) and (-4, 1)

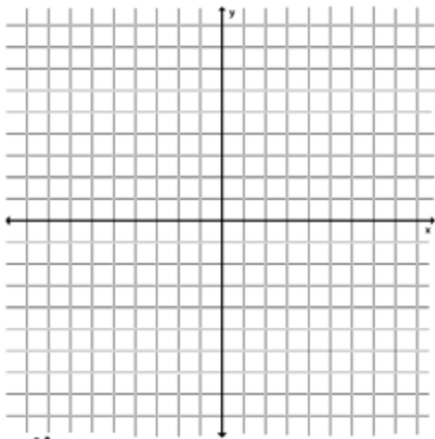
32) Passes through (1, 6) and is parallel to $y = 3x + 4$

33) Passes through (8, 3) and is perpendicular to $y = \frac{2}{3}x - 4$

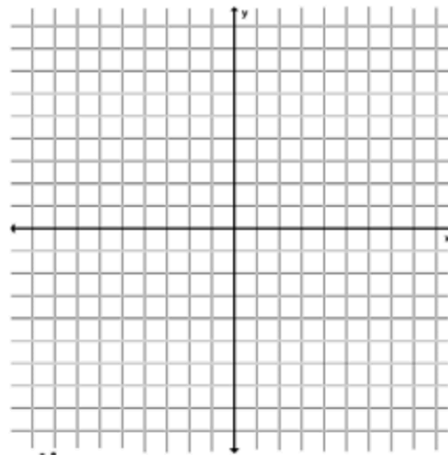
Graphing Linear Functions

Graph the following linear functions on the coordinate plane.

34) $y = 2x - 4$



35) $-2x - 5y = 15$



Solving Systems of 2 Linear Equations

Solve the systems by the method indicated.

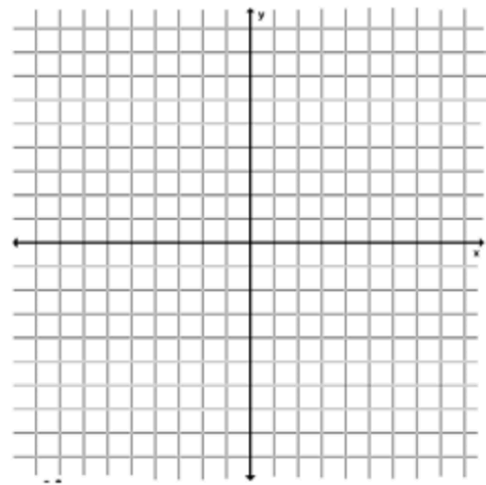
36) By substitution:
$$\begin{aligned} 6x - 5y &= -3 \\ y &= -7x - 24 \end{aligned}$$

37) By substitution:
$$\begin{aligned} y &= -6x + 15 \\ y &= -3x + 6 \end{aligned}$$

38) By elimination:
$$\begin{aligned} -6x - 7y &= 18 \\ 5x + 14y &= -15 \end{aligned}$$

39) By elimination:
$$\begin{aligned} 2x + 2y &= -2 \\ 3x - 5y &= 13 \end{aligned}$$

40) By graphing:
$$\begin{aligned} y &= x - 3 \\ x &= -5 \end{aligned}$$



Multiplying Polynomials

Simplify the expressions by multiplying and combining like terms.

41) $(4x + 4)(3x - 8)$

42) $4x^2(8x^3 + 2x^2 + 2)$

43) $(2x + 3)^2$

44) $(x^2 + x - 5)(x^2 + 7x + 2)$

Factoring Polynomials

Factor the following polynomials.

45) $16x^3y^3 + 8xy^2 - 4x^2y^2$

46) $25x^2 - 36$

47) $x^2 - 2x - 48$

48) $4x^2 - 2x - 20$

Simplifying Radical Expressions

Simplify.

49) $3\sqrt{2} + 4\sqrt{2}$

50) $(3\sqrt{2})(4\sqrt{2})$

51) $(2\sqrt{3})(4\sqrt{2})$

52) $\sqrt{300}$

53) $\sqrt{80}$

54) $\sqrt{96x^3}$

Exponent Rules

Simplify. Your answer should contain only positive exponents.

55) $(x^6)^2$

56) $(x^2y^3)(x^5y)$

57) $(x^9)^0$

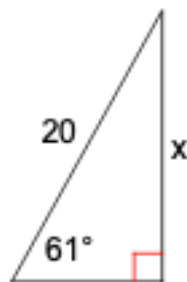
58) $(2x^3y^{-4})^{-2}$

59) $\frac{15x^5y^3}{3x^9y}$

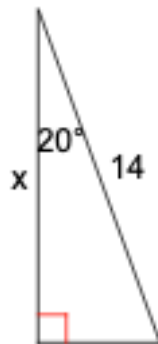
Trigonometry

Find the missing side. Round to the tenths place.

60)



61)

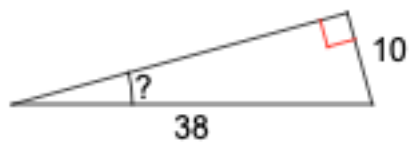


62)



Find the measure of the indicated angle to the nearest degree.

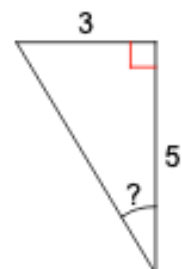
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64)

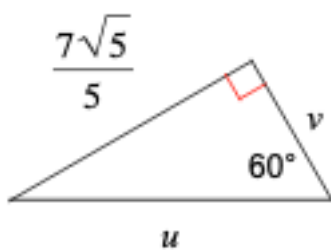


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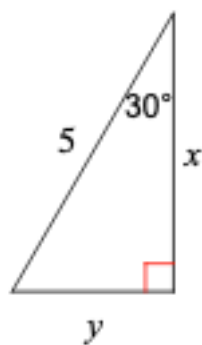


Use 30° - 60° - 90° or 45° - 45° - 90° rules to find the missing side lengths.

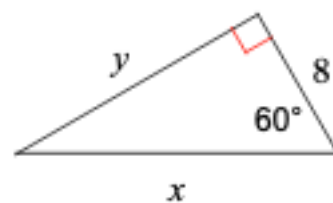
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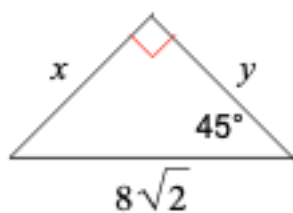
67)



68)



69)



70)

