

## Solving Equations:

Solve each equation below.

1. $7x - 3(x + 6) = -2$	2. $7(x + 5) - 3 = 3(x + 8)$	3. $2x(x + 3) = 2x^2 + 2x + 6$
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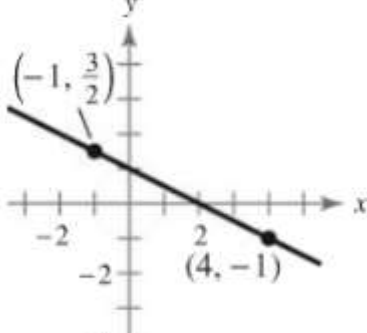
Solve each equation below, by **factoring**.

4. $x^2 + 3x + 2 = 0$	5. $x^2 - 6x + 9 = 0$
6. $x^2 + 6x - 7 = 0$	7. $x^2 - 11x + 18 = 0$
8. $x^2 + 5x = 0$	9. $3x^3 - 27x^2 = 0$
10. $x^2 - 25 = 0$	11. $4x^2 - 25 = 0$
12. $2x^3 - 12x^2 + 16x = 0$	13. $x^3 + x^2 - 9x - 9 = 0$

## Lines and Linear Equations:

14. What do you know about the slopes of:  i. parallel lines?  ii. perpendicular lines?  iii. vertical lines?  iv. horizontal lines?	15. For the equation of a line, what is the:  i. slope-intercept form?  ii. point-slope form?  iii. standard form?
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Write the equation for each line below. Be sure to consider the given information and use the appropriate form of the equation.

16. crosses the point $(0, -4)$ and slope = 2	17. passes through the point $(3, -7)$ and has a slope of 2
18. crossed the points $(1, 1)$ and $(2, -1)$	19. passes through $(2, \frac{1}{2})$ and $(\frac{1}{2}, \frac{5}{4})$
20. has a zero slope and passes through the point $(-5, 3)$	21. perpendicular to the line with the equation $2x - 3y = 5$ and passes through the point $(7, 4)$
22. has an undefined slope and passes through the point $(-5, 3)$	23. 

### Systems of Linear Equations:

Solve the system of equations below.

24. $\begin{cases} x + y = 19 \\ 5x - y = 23 \end{cases}$	25. $\begin{cases} 4x + 3y = 18 \\ x + y = 3 \end{cases}$
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## Functions: Their Graphs, Properties, and Characteristics

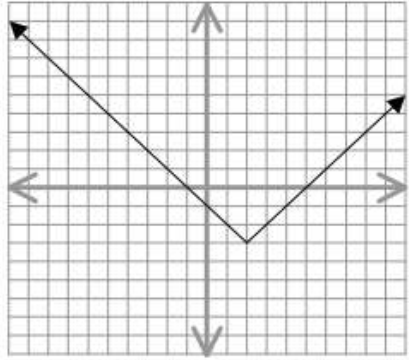
26. When given an equation for a function, explain how to find the...

a. x-intercept	b. y-intercept
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Algebraically find the exact coordinates of the x and y intercepts for the given functions. Show work and write your answers as ordered pairs.

<p>27. <math>f(x) = 3x - 7</math></p>          <p>x-int(s): _____</p> <p>y-int: _____</p>	<p>28. <math>h(x) = (x - 10)(x + 3)</math></p>          <p>x-int(s): _____</p> <p>y-int: _____</p>
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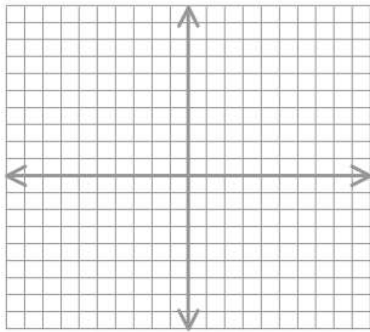
Find  $f(2)$ .

<p>29. <math>f(x) = 2x^2 - 8x</math></p>          <p style="text-align: center;"><math>f(2) =</math> _____</p>	<p>30. <math>f(x) = \frac{2x-3}{x^2+1}</math></p>          <p style="text-align: center;"><math>f(2) =</math> _____</p>														
<p>31.</p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="padding: 5px;">x</th> <th style="padding: 5px;">f(x)</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;">-1</td> <td style="padding: 5px;">5</td> </tr> <tr> <td style="padding: 5px;">0</td> <td style="padding: 5px;">3</td> </tr> <tr> <td style="padding: 5px;">1</td> <td style="padding: 5px;">-8</td> </tr> <tr> <td style="padding: 5px;">2</td> <td style="padding: 5px;">-10</td> </tr> <tr> <td style="padding: 5px;">3</td> <td style="padding: 5px;">-4</td> </tr> <tr> <td style="padding: 5px;">4</td> <td style="padding: 5px;">0</td> </tr> </tbody> </table>          <p style="text-align: center;"><math>f(2) =</math> _____</p>	x	f(x)	-1	5	0	3	1	-8	2	-10	3	-4	4	0	<p>32.</p>           <p style="text-align: center;"><math>f(2) =</math> _____</p>
x	f(x)														
-1	5														
0	3														
1	-8														
2	-10														
3	-4														
4	0														

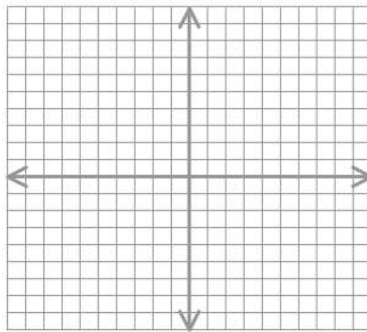
33. For some function  $f$ , if  $f(2) = 0$ , what does this tell you about the graph of the function?

Graph each equation.

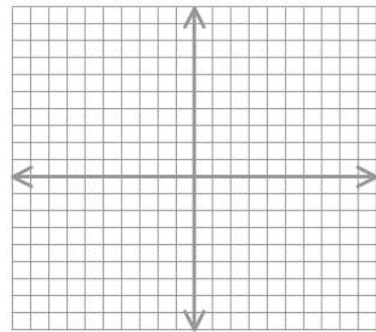
34.  $x + y = 4$



35.  $y = -2x^2$



36.  $y = -\frac{1}{2}x^2 + 8$



If  $f(x) = 3x + 2$  and  $g(x) = x^2 - 2x$ , find...

37.  $f(x) + 2g(x)$

Blank space for the answer to question 37.

38.  $g(x) - f(x)$

Blank space for the answer to question 38.

39.  $f(x) \cdot g(x)$

Blank space for the answer to question 39.

Answer each of the following.

40. Define/Explain domain.

Blank space for the answer to question 40.

41. Define/Explain range.

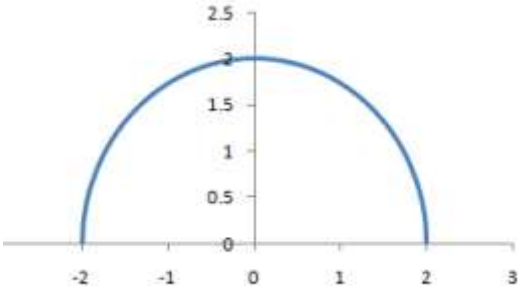
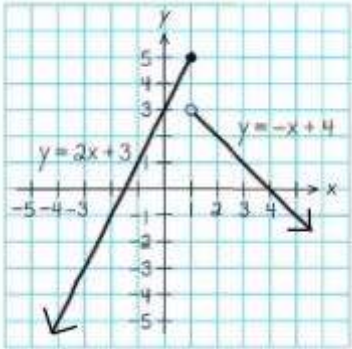
Blank space for the answer to question 41.

42. Explain why the domain of  $f(x) = \sqrt{x - 5}$  is all real numbers greater than or equal to 5.

Blank space for the answer to question 42.

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Give the domain and range for each function shown below. Use your graphing calculator and your understanding of functions to help you. You may use interval, inequality, or list notation.

<p>43. <math>(0, 1), (1, -2), (2, 0), (3, 2), (4, 4)</math></p> <p>D: _____</p> <p>R: _____</p>	<p>44. <math>f(x) = 2x^2 + 4</math></p> <p>D: _____</p> <p>R: _____</p>
<p>45.</p>  <p>D: _____</p> <p>R: _____</p>	<p>46.</p>  <p>D: _____</p> <p>R: _____</p>

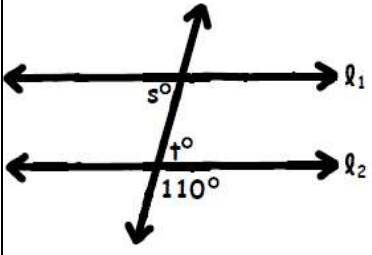
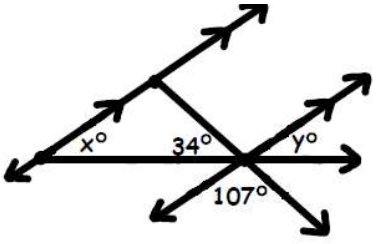
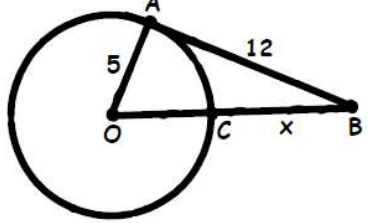
### Simplifying Algebraically:

Answer each question below.

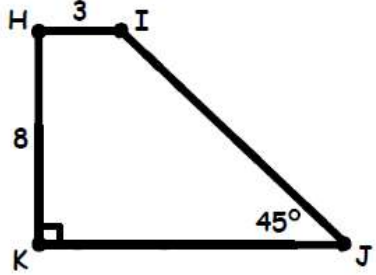
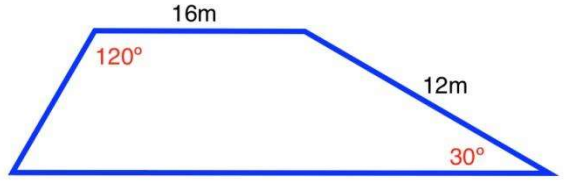
<p>47. Solve for <math>x</math> in the equation: <math>z = bx + cy</math></p>	<p>48. Solve for <math>n</math> in the equation: <math>bn = n + a</math></p>
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## Geometry:

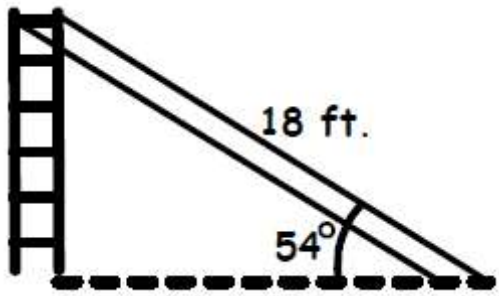
Find the value of the variable in each diagram below. Fully simplify your answers.

<p>49. Find <math>s</math> and <math>t</math>.</p> 	<p>50. Find <math>x</math> and <math>y</math>.</p> 	<p>51. Find <math>x</math>.</p> 
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Find the perimeter of each quadrilateral. Write your answer as an expression in exact radical form and as a decimal rounded to the nearest hundredth.

<p>52.</p> 	<p>53.</p> 
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54. The playground in the local park has a tall slide that is 18 feet long. If the end of the slide forms a  $54^\circ$  angle with the ground, how tall is the slide? Round your answer to the nearest hundredth.



55. In  $\triangle MNG$ ,  $m\angle M = 4x$ ,  $m\angle N = 3x + 12$ ,  $m\angle G = x - 8$  (where  $x > 0$ ).  
Find  $m\angle N$ . What is the longest side of  $\triangle MNG$ ?

### Exponents:

56. Taking the square root of a number is the same thing as raising that number to what power?

57. Write the following exponential expressions in fraction form.

a.  $2^{-1}$

b.  $5^{-2}$

c.  $x^{-3}$

### Random:

58. Why are you taking PreCalculus?

## ANSWER KEY

1. $x = 4$	2. $x = -2$	3. $x = \frac{3}{2}$
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4. $\{-1, -2\}$	5. $\{3\}$
6. $\{1, -7\}$	7. $\{9, -20\}$
8. $\{0, -5\}$	9. $\{0, 9\}$
10. $\{\pm 5\}$	11. $\{\pm \frac{5}{2}\}$
12. $\{0, 2, 4\}$	13. $\{-1, \pm 3\}$

14. What do you know about the slopes of: v. parallel lines have equal slopes vi. perpendicular lines have slopes that are negative reciprocals vii. vertical lines have no slope (undefined) viii. horizontal lines have slope of zero	15. For the equation of a line, what is the: iv. slope-intercept form $y = mx + b$ v. point-slope form? $y - y_1 = m(x - x_1)$ vi. standard form? $Ax + By = C$
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16. $y = 2x - 4$	17. $y + 7 = 2(x - 3)$
18. $y - 1 = -2(x - 1)$ OR $y + 1 = -2(x - 2)$	19. $y - \frac{1}{2} = -\frac{1}{2}(x - 2)$ OR $y - \frac{5}{4} = -\frac{1}{2}(x - \frac{1}{2})$
20. $y = 3$	21. $y - 4 = -\frac{3}{2}(x - 7)$
22. $x = -5$	23. $y = -\frac{1}{2}x + 1$

24. $(7, 12)$	25. $(9, -6)$
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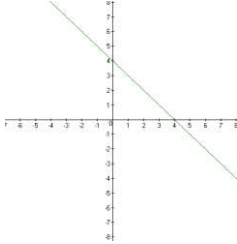
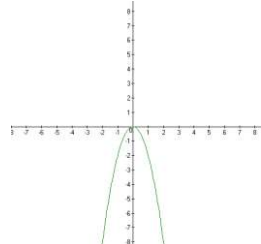
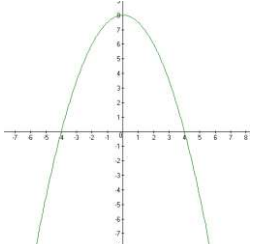
26.

a. To find an x-intercept, plug in 0 for y, and solve for x.	b. To find a y-intercept, plug in 0 for x, and solve for y.
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27. x-int(s): $(\frac{7}{3}, 0)$ y-int: $(0, 7)$	28. x-int(s): $(10, 0), (-3, 0)$ y-int: $(0, -30)$
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29. $f(2) = -8$	30. $f(2) = \frac{1}{5}$
31. $f(2) = -10$	32. $f(2) = -3$

33.  $f(2) = 0$  tells you that the graph of the function crosses the x-axis at  $(2, 0)$ .

34. 	35. 	36. 
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37. $2x^2 - x + 2$	38. $x^2 - 5x - 2$	39. $3x^3 - 4x^2 - 4x$
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