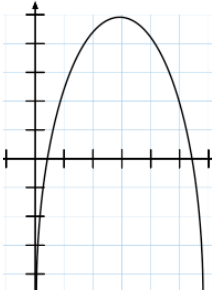
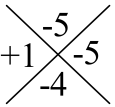
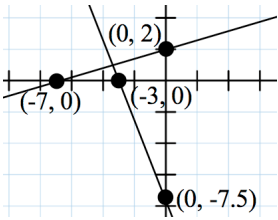

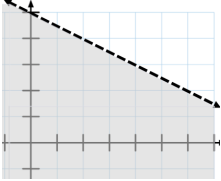


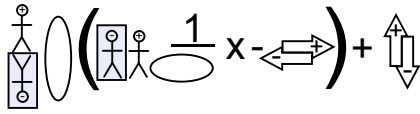
Study Guide Problem & Solution		New Example												
<p>Add.</p> $8\sqrt{3} + \sqrt{48}$ <p>YOU NEED TO MAKE THEM LIKE TERMS. SO, SIMPLIFY THE SECOND SQUARE ROOT TO MATCH THE FIRST. THEN, ADD.</p> $\begin{aligned} 8\sqrt{3} + \sqrt{48} &= 8\sqrt{3} + \sqrt{16}\sqrt{3} \\ &= 8\sqrt{3} + 4\sqrt{3} \\ &= 12\sqrt{3} \end{aligned}$	1	<p>Add.</p> $\sqrt{28} + 2\sqrt{7}$												
<p>Graph $f(x) = -x^2 + 6x - 4$</p> <p>DETERMINE 3 THINGS: UP OR DOWN? VERTEX? Y-INTERCEPT? THEN, GRAPH WHAT YOU FIND.</p> <p>$-x^2$ MEANS IT POINTS DOWN.</p> <p>VERTEX: $x = \frac{-b}{2a} = \frac{-6}{2(-1)} = \frac{-6}{-2}$</p> $x = 3$ $y = -(3)^2 + 6(3) - 4$ $y = -9 + 18 - 4$ $y = 5$ <p style="text-align: center;">VERTEX: (3, 5)</p> <p>Y-INTERCEPT: $y = -(0)^2 + 6(0) - 4$</p> <p style="text-align: center;">(0, -4)</p> 	2	<p>Graph $f(x) = x^2 + 8x - 10$</p>												
<p>Add. Write your answer in standard form.</p> $(3h^7 + h^4) + (-h^7 + 2h^4 - 6)$ <p>COMBINE LIKE TERMS. HIGHEST EXPONENT GOES FIRST.</p> $\begin{aligned} 3h^7 - h^7 + h^4 + 2h^4 - 6 \\ 2h^7 + 3h^4 - 6 \end{aligned}$	3	<p>Add. Write your answer in standard form.</p> $(5g^5 + 3g^2 - 2) + (g^5 + 6g^2 + 1)$												
<p>Find the product</p> $(7x - 2)(x^4 + 2x^2 + 1)$ <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td></td> <td>x^4</td> <td>$+2x^2$</td> <td>$+1$</td> </tr> <tr> <td>$7x$</td> <td>$7x^5$</td> <td>$+14x^3$</td> <td>$+7x$</td> </tr> <tr> <td>-2</td> <td>$-2x^4$</td> <td>$-4x^2$</td> <td>-2</td> </tr> </table> <p>USE THE BOX METHOD.</p> <p>ADD 'EM IN ORDER OF EXPONENTS.</p> $7x^5 - 2x^4 + 14x^3 - 4x^2 + 7x - 2$		x^4	$+2x^2$	$+1$	$7x$	$7x^5$	$+14x^3$	$+7x$	-2	$-2x^4$	$-4x^2$	-2	4	<p>Find the product</p> $(3x + 6)(2x^3 - 5x^2 + 4)$
	x^4	$+2x^2$	$+1$											
$7x$	$7x^5$	$+14x^3$	$+7x$											
-2	$-2x^4$	$-4x^2$	-2											
<p>Solve the equation $x^2 = 5 + 4x$</p> <p>WRITE AS A QUADRATIC AND USE FACTORING (OR QUADRATIC FORMULA, OR COMPLETING THE SQUARE)</p> $\begin{aligned} x^2 &= 5 + 4x \\ x^2 - 4x &= 5 \\ x^2 - 4x - 5 &= 0 \end{aligned}$ <p style="text-align: center;">X-FACTOR!!!</p> <div style="text-align: center;">  </div> $\begin{aligned} (x + 1)(x - 5) &= 0 \\ x + 1 = 0 \text{ or } x - 5 &= 0 \\ x = -1 \text{ or } x &= 5 \\ x &= \{-1, 5\} \end{aligned}$	5	<p>Solve the equation $x^2 = -10 + 7x$</p>												

<p>Graph the system of equations.</p> $\begin{cases} -2x + 7y = 14 \\ -5x - 2y = 15 \end{cases}$ <p>USE THE INTERCEPTS: WHERE DOES $x=0$, WHERE DOES $y=0$?</p> <p>LINE A: $0 + 7y = 14$ $y = 2$ $(0, 2)$ $-2x + 0 = 14$ $x = -7$ $(-7, 0)$</p> <p>LINE B: $0 - 2y = 15$ $y = -7.5$ $(0, -7.5)$ $-5x - 0 = 15$ $x = -3$ $(-3, 0)$</p> <p>GRAPH THE POINTS AND CONNECT EACH LINE.</p> 	6	<p>Graph the system of equations.</p> $\begin{cases} 3x - 10y = 30 \\ -2x + 11y = 11 \end{cases}$
<p>Find the product DISTRIBUTE.</p> $3ab^3(-5a^2b + a^4b^3)$ $3ab^3(-5a^2b + a^4b^3) = -15A^3B^4 + 3A^5B^6$	7	<p>Find the product. $5m^3n^2(6mn^4 - m^2n^5)$</p>
<p>Graph the solution to the following inequality</p> $13 + 2x < 13$ <p>SPLIT IT INTO 2 INEQUALITIES: +13 AND -13 (FOR NEG-FLIP SIGN)</p> $3 + 2x < 13$ $3 + 2x > -13$ $2x < 10$ OR $2x > -16$ $\{x -8 < x < 5\}$ $x < 5$ $x > -8$ <p>DRAW THE NUMBER LINE:</p> 	8	<p>Graph the solution to the following inequality.</p> $ 6 - 3x > 12$
<p>Graph the inequality $y < \frac{1}{2}x + 5$.</p> <p>IT IS IN SLOPE-INTERCEPT FORM, SO $m = \frac{1}{2}$ AND $b = 5$ OR $(0, 5)$</p> <p>THE LINE SHOULD BE DOTTED, BECAUSE THE INEQUALITY IS NOT "OR EQUAL TO."</p> <p>IF I TEST $(0, 0)$, I CAN SEE WHICH WAY TO SHADE:</p> $0 < (0.5)(0) + 5$ $0 < 0 + 5$ TRUE! SHADE TOWARD $(0, 0)$ 	9	<p>Graph the inequality</p> $y > -\frac{1}{3}x + 2$
<p>Solve the system $\begin{cases} 4x + y = 8 \\ y = 2x + 2 \end{cases}$</p> <p>SINCE ONE EQUATION HAS ALREADY BEEN SOLVED FOR Y, USE SUBSTITUTION.</p> $4x + y = 8$ $4x + 2x + 2 = 8$ $y = 2x + 2$ $6x + 2 = 8$ PLUG X INTO THE OTHER EQUATION. $y = 2(1) + 2$ $6x = 6$ $y = 4$ $x = 1$ <p style="text-align: center;">SOLUTION: $(1, 4)$</p>	10	<p>Solve the system $\begin{cases} x - 3y = -3 \\ x = 4y - 5 \end{cases}$</p>

<p>Solve the system $\begin{cases} 2x - 4y = 8 \\ -2x - y = -18 \end{cases}$</p> <p>ALL OF THE TERMS LINE UP NEATLY, SO USE ELIMINATION. THERE IS NO NEED TO MULTIPLY, BECAUSE THE X TERMS ALREADY CANCEL.</p> $\begin{array}{r} 2x - 4y = 8 \\ -2x - y = -18 \\ \hline -5y = -10 \\ y = 2 \end{array}$ <p>NOW PLUG IT IN TO FIND X.</p> $\begin{array}{r} 2x - 4y = 8 \\ 2x - 4(2) = 8 \\ 2x - 8 = 8 \\ 2x = 16 \\ x = 8 \end{array}$ <p>SOLUTION: (8, 2)</p>	11	<p>Solve the system $\begin{cases} 5x - 3y = -1 \\ x + 3y = 7 \end{cases}$</p>
<p>Determine the number of solutions for the system $\begin{cases} 4x + 3y = 15 \\ 12y - 16x = -60 \end{cases}$</p> <p>SOLVE THE SYSTEM.</p> <p>IF THERE IS AN ANSWER (EX: 5 = 5), THEN IT HAS ONE SOLUTION. IF IT ALWAYS WORKS (EX: 5 = 5), THERE ARE INFINITELY MANY. IF IT NEVER WORKS (EX: 4 = 7), THERE ARE NO SOLUTIONS.</p> $\begin{array}{r} 4x + 3y = 15 \\ 12y - 16x = -60 \\ (3y + 4x = 15)(4) \\ 12y - 16x = -60 \\ \hline 12y + 16x = 60 \\ 12y - 16x = -60 \\ \hline 24y = 0 \\ y = 0 \end{array}$ <p>FIRST, I HAVE TO PUT EACH PROBLEM IN MATCHING ORDER.</p> <p>THEN, I HAVE TO MULTIPLY THE TOP EQUATION BY 4 TO CANCEL X.</p> <p>THEN, I HAVE TO MULTIPLY THE TOP EQUATION BY 4 TO CANCEL X.</p> <p>NOW, ELIMINATE AND SIMPLIFY!</p> <p>THERE IS AN ANSWER, SO: ONE SOLUTION.</p>	12	<p>Determine the number of solutions for the system $\begin{cases} 7x + 4y = 12 \\ -20y - 35x = 60 \end{cases}$</p>
<p>Solve the system of equations $\begin{cases} 2x + 4y + z = 10 \\ x - 5y + 2z = 25 \\ -x + y + z = -5 \end{cases}$</p> <p>A. (-5, -2, -8) B. (5, -2, 8) C. (6, 4, 20) D. (7, -2, 4)</p> <p>PLUG IN EACH POINT, AND CHECK IF IT IS THE ANSWER.</p> <p>A. $2(-5) + 4(-2) + 8 = 10$ $-10 - 8 + 8 = 10$ $-10 = 10$ NOPE. NEXT!</p> <p>B. $2(5) + 4(-2) - 8 = 10$ $10 - 8 - 8 = 10$ $-6 = 10$ NOPE. NEXT!</p> <p>C. $2(6) + 4(4) + 20 = 10$ $12 + 16 + 20 = 10$ $48 = 10$ NOPE. NEXT!</p> <p>D. $2(7) + 4(-2) + 4 = 10$ $14 - 8 + 4 = 10$ $6 + 4 = 10$ YES! CHECK THE OTHERS...</p> <p>$7 - 5(-2) + 2(4) = 25$ $7 + 10 + 8 = 25$ $17 + 8 = 25$ YES! CHECK THE LAST ONE...</p> <p>$-(7) + (-2) + (4) = -5$ $-7 + 2 = -5$ YES! IT WORKS!</p> <p>SOLUTION: D. (7, -2, 4)</p>	13	<p>Solve the system of equations $\begin{cases} x + y + z = 1 \\ x - y - z = 5 \\ x - y + z = 9 \end{cases}$</p> <p>A. (3, -2, 0) B. (3, -4, 2) C. (6, 4, 1) D. (-6, -2, 7)</p>

The parent function $f(x) = x^2$ is reflected over the x -axis, horizontally stretched by a factor of 4, and translated down 3 units to create g . Use the description to write the quadratic function in vertex form.

USE THE PICTURE EQUATION AS A GUIDE:



REFLECTED OVER x PUTS A NEGATIVE OUT FRONT
HORIZONTALLY STRETCHED BY 4—LIAR! COMPRESSED BY $\frac{1}{4}$
SUBTRACT 3 ON THE OUTSIDE

$$g(x) = -\left(\frac{1}{4}x\right)^2 - 3$$

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The parent function $f(x) = x^2$ is vertically stretched by a factor of 3, and translated left 6 units to create g . Use the description to write the quadratic function in vertex form.

Graph $y \geq x^2 + 2x - 8$.

DETERMINE THE TRAITS OF THE QUADRATIC.

IT'S POSITIVE, SO IT FACES UP!

FIND THE VERTEX:

$$x = \frac{-b}{2a} = \frac{-2}{2(1)} = \frac{-2}{2} = -1 \quad \text{PLUG IT IN FOR Y!}$$

$$y = (-1)^2 + 2(-1) - 8 = 1 - 2 - 8 = -9$$

VERTEX IS $(-1, -9)$

FIND THE ZEROS:

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{-2 \pm \sqrt{2^2 - 4(1)(-8)}}{2(1)} = \frac{-2 \pm \sqrt{4 + 32}}{2}$$

$$x = \frac{-2 \pm \sqrt{36}}{2} = \frac{-2 \pm 6}{2} = \frac{4}{2} \quad \text{OR} \quad \frac{-8}{2}$$

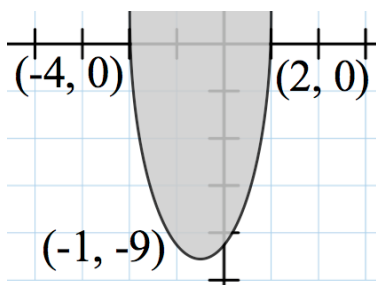
ZEROS: $(2, 0)$ AND $(-4, 0)$

GRAPH IT! THEN PLUG IN $(0,0)$ TO SEE IF IT'S INCLUDED.

$$0 \geq 0^2 + 2(0) - 8$$

$$0 \geq -8$$

YES! SHADE TOWARDS $(0,0)$



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Graph $y \leq x^2 - 3x + 2$.