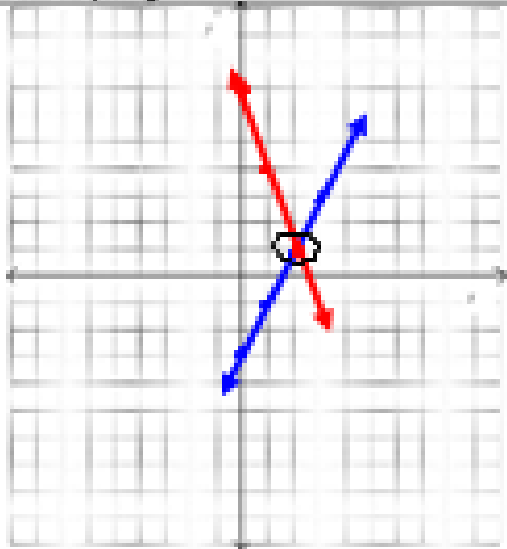


Solve the linear system by graphing and substitution. Show all work.

$$\begin{cases} 6x + 2y = 14 \\ y = 2x - 3 \end{cases} \quad \leftarrow \text{Use this for both graphing and substitution}$$

1. Graphing	2. Substitution
 <p style="color: red; margin-left: 20px;"> $6x + 2y = 14$ $-6x$ $-6x$ <hr style="width: 50%; margin-left: 0;"/> $2y = -6x + 14$ $\frac{2y}{2} = \frac{-6x + 14}{2}$ $y = -3x + 7$ </p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin-left: 20px;"> Ordered Pair: $(2, 1)$ </div>	$6x + 2(2x - 3) = 14$ $6x + 4x - 6 = 14$ $10x - 6 = 14$ $\begin{array}{r} +6 \\ +6 \end{array}$ $\frac{10x + 20}{10} = \frac{20}{10}$ $x = 2$ $y = 2(x) - 3$ $y = 4 - 3 = 1$ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin-left: 20px;"> Ordered Pair: $(2, 1)$ </div>

Solve the Systems of Equations:

<p>3. You're the theater manager for a show. Adult tickets are \$10 and student tickets are \$5. You sold 200 tickets for \$1875. How many of each?</p> $\begin{aligned} 10x + 5y &= 1875 \\ x + y &= 200 \end{aligned}$ $\begin{array}{r} 10x + 5y = 1875 \\ -x - y = -200 \\ \hline 9x + 6y = 1675 \end{array}$ $x = -y + 200$ $10(-y + 200) + 5y = 1875$ $-10y + 2000 + 5y = 1875$ $-5y = -125$ $\frac{-5y}{-5} = \frac{-125}{-5}$ $y = 25$ $x + 25 = 200$ $x = 175$ <p style="color: blue; border: 1px solid blue; border-radius: 50%; padding: 5px; display: inline-block;">25 student 175 adult</p>	<p>4. There are 100 cows and chickens and 242 legs. How many of each?</p> $\begin{aligned} x + y &= 100 \rightarrow x = -y + 100 \\ 4x + 2y &= 242 \end{aligned}$ $4(-y + 100) + 2y = 242$ $-4y + 400 + 2y = 242$ $-2y = -158$ $y = 79$ <p style="color: red; border: 1px solid red; border-radius: 50%; padding: 5px; display: inline-block;">21 cows 79 chickens</p> $x + 79 = 100$ $x = 21$
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Simplify the Radicals Completely

<p>5. $\pm\sqrt{80} = \pm\sqrt{16 \cdot 5}$ $= \pm 4\sqrt{5}$</p>	<p>6. $\sqrt{24} = \sqrt{4 \cdot 6}$ $= 2\sqrt{6}$</p>	<p>7. $-\sqrt{90} = -\sqrt{9 \cdot 10}$ $= -3\sqrt{10}$</p>
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Solve the quadratic equations

<p>8. $\sqrt{x^2} = 81$ $x = \pm 9$</p>	<p>9. $111 + x^2 = 211$ $-111 \quad -111$ $\sqrt{x^2} = \pm\sqrt{100}$ $x = \pm 10$</p>	<p>10. $5 - x^2 = -31$ $-5 \quad -5$ $-x^2 = -36$ $\sqrt{x^2} = \pm\sqrt{36}$ $x = \pm 6$ <i>Don't forget to include the negative</i></p>
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11 & 12. Evaluate the functions. Write your final answer as an ordered pair.

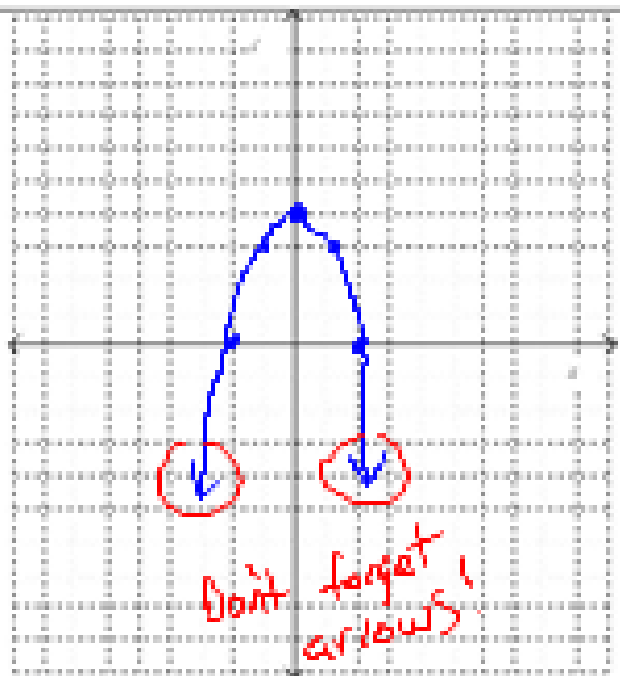
<p>11. $f(x) = x^2 - 11; x = -1$ $f(-1) = (-1)^2 - 11$ $f(-1) = 1 - 11$ $f(-1) = -10$ $(-1, -10)$</p>	<p>12. $f(x) = -5x^2 + 7; x = -3$ $f(-3) = -5(-3)^2 + 7$ $f(-3) = -5(9) + 7$ $f(-3) = -45 + 7$ $f(-3) = -38$ $(-3, -38)$</p>
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Solve the Problems. Write equations. Show all work

<p>13. The temperature dropped 15 degrees overnight and then doubled the next day to 32 degrees. What was the original temperature?</p> <p>$x = 15$</p> <p>Temp dropped 15 then doubled $2(x - 15) = 32$ $2x - 30 = 32$ $+30 \quad +30$ $2x = 62$ $\frac{2x}{2} = \frac{62}{2}$ $x = 31 \text{ degrees}$</p> <p>Temp doubled then dropped 15 $2x - 15 = 32$</p>	<p>14. You bought a plane ticket to Australia for \$1200 and plan on going for 30 days. You have \$4100 in savings. How much can you spend each day?</p> <p>$30x + 1200 = 4100$ $-1200 \quad -1200$ <hr/> $30x = 2900$ $\frac{30x}{30} = \frac{2900}{30}$ $x = 96.67$</p>
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15. Graph the equation. Show all work.

x	$f(x) = -x^2 + 4$	f(x)
-2	$-(-2)^2 + 4$	0
-1	$-(-1)^2 + 4$	3
0		4
1	$-1^2 + 4$	3
2	$-2^2 + 4$	0



Factor Completely

16. $x^2 + 7x + 12$

$(x+4)(x+3)$

17. $x^2 + 11x + 24$

$(x+8)(x+3)$

18. $x^2 + 7x - 30$

$(x+10)(x-3)$

19. $x^2 - 4x + 32$

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

20. Solve the equation by factoring.

$x^2 + 9x + 8 = 0$

$(x+8)(x+1) = 0$

$x+8=0$

$x = -8$

$x+1=0$

$x = -1$

21. Bonus: Substitute your solution into original equation to verify.

$x^2 + 9x + 8 = 0$

$(-8)^2 + 9(-8) + 8 = 0$

$64 - 72 + 8 = 0$

$0 = 0 \checkmark$

$x^2 + 9x + 8 = 0$

$(-1)^2 + 9(-1) + 8 = 0$

$1 - 9 + 8 = 0$

$0 = 0 \checkmark$