

§. 1 p. 507

ex 4 (4, 3)

Is this a  
solution for  
the system  
(both equations)?

$$\begin{aligned}x + 2y &= 10 \\ 3x + 5y &= 3\end{aligned}$$

$$\begin{aligned}4 + 2(3) &\stackrel{?}{=} 10 \quad \checkmark \\ 3(4) + 5(3) &\stackrel{?}{=} 3 \quad \times\end{aligned}$$

No.

ex 6 (-9, -2)

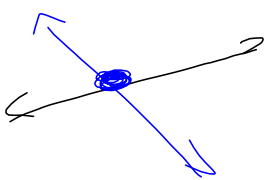
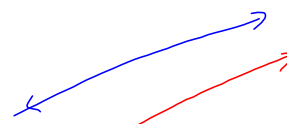
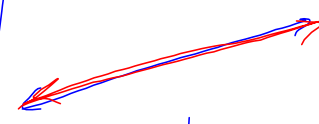
$$2x - 5y = -8$$

$$3x + 6y = -39$$

$$\begin{aligned}2(-9) - 5(-2) &\stackrel{?}{=} -8 \\ -18 + 10 &= -8 \quad \checkmark\end{aligned}$$

$$\begin{aligned}3(-9) + 6(-2) &\stackrel{?}{=} -39 \\ -27 - 12 &= -39 \quad \checkmark\end{aligned}$$

Yes.

 <p>1 point in common <math>(x, y)</math></p>	 <p>parallel no solution</p>	 <p>coincide infinitely many solutions</p>
<p>independent consistent p. 505</p>	<p>independent inconsistent</p>	<p>dependent consistent equation of 1 line</p>

ex 1b

$$\begin{aligned} x - y &= 3 \\ x + y &= -1 \end{aligned}$$

$$\begin{array}{r|l} x & y \\ \hline 0 & -3 \\ 3 & 0 \\ 6 & 3 \end{array}$$

$$0 - y = 3$$

$$y = -3$$

$$x - (-3) = 3$$

$$x + 3 = 3$$

$$x = 0$$

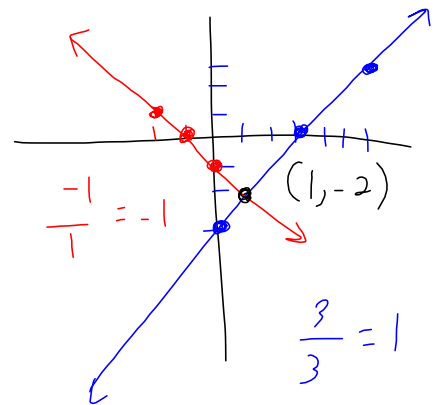
$$-y = -3$$

$$y = 3$$

$$\begin{array}{r|l} x & y \\ \hline 0 & -1 \\ -1 & 0 \\ -2 & 1 \end{array}$$

$$-2 + 1 = -1$$

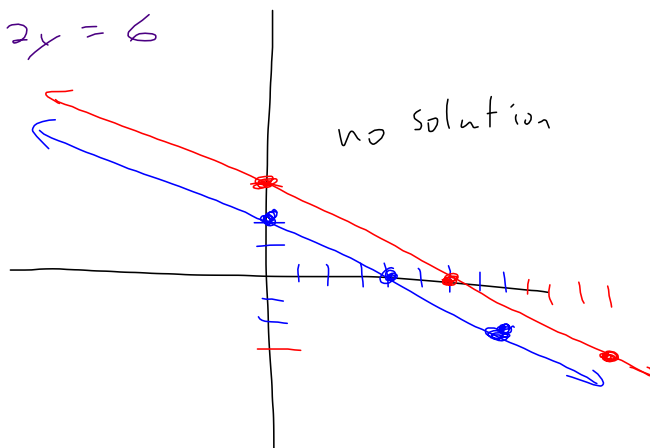
$$\begin{aligned} 1 - (-2) &= 3 \checkmark \\ 1 + (-2) &= -1 \checkmark \end{aligned}$$



ex 26  $x + 2y = 4$   
 $\frac{2x + 4y = 12}{2} \rightarrow x + 2y = 6$

x	y
0	2
4	0
8	-2

x	y
0	3
6	0
12	-3

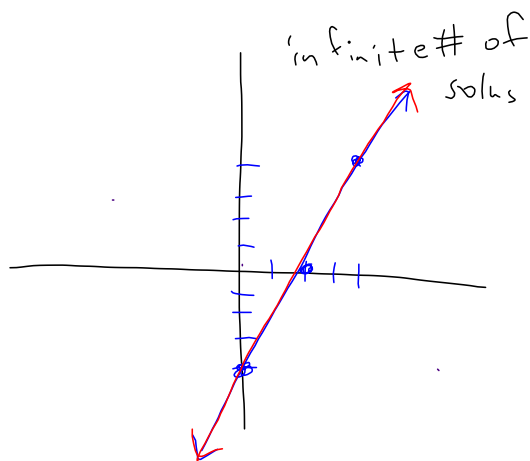


ex 28

$2x - y = 4$   
 $\frac{4x - 2y = 8}{2} \rightarrow 2x - y = 4$

x	y
0	-4
2	0
4	4

x	y
0	-4
2	0
4	4

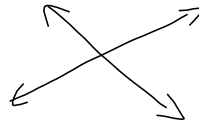


$\{(x, y) \mid 2x - y = 4\}$

ex 36

$$y + 2x = 6 \rightarrow 2x + y = 6$$

$$x - 3y = -4 \rightarrow x - 3y = -4$$



1 solution

consistent  
independent

ex 38

$$\begin{array}{r}
 2x - y = 4 \\
 y + 4 = 2x \\
 -2x \quad -4 \quad -2x \quad -4 \\
 \hline
 -2x + y = -4
 \end{array}$$

-1 (multiplying the second equation by -1)  
-1 (multiplying the first equation by -1)

same line  
(coincide)

infinite # of solns

$$\{(x, y) \mid 2x - y = 4\}$$

dependent

consistent

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ex4

$$x + 3y = -28$$

$$y = -5x$$

$$x + 3(-5x) = -28$$

$$x - 15x = -28$$

$$-14x = -28$$

$$x = 2$$

① get 1 eq.

$$x = \underline{\quad} \text{ or } y = \underline{\quad}$$

② substitute

$$y = -5x$$

$$y = -5(2)$$

$$y = -10$$

$$(2, -10)$$

ex6  $4x + 3y = -5$

$$x = \underline{y - 3}$$

$$4(y - 3) + 3y = -5$$

$$4y - 12 + 3y = -5$$

$$7y = 7$$

$$y = 1$$

$$x = y - 3$$

$$x = 1 - 3$$

$$x = -2$$

$$(-2, 1)$$

ex 10  $3x - 2y = 19$

$$\begin{array}{r} x + y = 8 \\ \quad -y \quad -y \end{array}$$

$$x = \underline{8 - y}$$

$$x = 8 - y$$

$$x = 8 - 1$$

$$x = 7$$

$$3(8 - y) - 2y = 19$$

$$(7, 1)$$

$$\begin{array}{r} 24 - 3y - 2y = 19 \\ -24 \quad \quad -24 \end{array}$$

$$-5y = -5$$

$$y = 1$$

ex 14  $4x - y = -3$

$$y = \underline{4x + 3}$$

$$4x - (4x + 3) = -3$$

$$\cancel{4x} - \cancel{4x} - 3 = -3$$

$$0 = 0$$

infinite # of solutions

ex 18

$$\begin{aligned} 2x + 10y &= 3 \\ x &= 1 - 5y \end{aligned}$$

$$2(1 - 5y) + 10y = 3$$

$$\begin{array}{r} 2 - 10y + 10y = 3 \\ -2 \qquad \qquad -2 \end{array}$$

$$2 = 3$$

no solution

$$0 = -1$$

ex 26

$$\left( \frac{x}{2} + \frac{y}{3} = \frac{7}{6} \right) \cdot \frac{6}{1} \text{ LCD}$$

$$\left( \frac{x}{4} - \frac{3y}{2} = \frac{9}{4} \right) \cdot \frac{4}{1} \text{ LCD}$$

$$\frac{6x}{2} + \frac{6y}{3} = \frac{42}{6}$$

$$3x + 2y = 7$$

$$\frac{4x}{4} - \frac{12y}{2} = \frac{36}{4}$$

$$x - 6y = 9$$

$$+6y \quad +6y$$

$$x = 6y + 9$$

$$x = 6(-1) + 9$$

$$x = -6 + 9$$

$$x = 3$$

$$(3, -1)$$

$$3(6y + 9) + 2y = 7$$

$$\begin{array}{r} 18y + 27 + 2y = 7 \\ -27 \qquad \qquad -27 \end{array}$$

$$20y = -20$$

$$y = -1$$

ex 30

$$\begin{cases} .1x + .9y = -2 \\ .5x - .2y = 4.1 \end{cases} \cdot 10$$

$$\begin{matrix} & -9y & -9y \\ x + 9y & = & -20 \\ \underline{5x - 2y} & = & 41 \end{matrix}$$

$$5(-9y - 20) - 2y = 41$$

$$\begin{array}{r} -45y - 100 - 2y = 41 \\ \phantom{-45y} + 100 \phantom{-2y} \phantom{=} \phantom{41} \\ \hline -47y = 141 \end{array}$$

$$\frac{-47y}{-47} = \frac{141}{-47} \quad y = -3$$

$$x = \underline{-9y - 20}$$

$$x = -9(-3) - 20$$

$$x = 27 - 20$$

$$x = 7$$

$$(7, -3)$$