

Journal Entry:

How can you tell by looking at a system of equations without graphing and tell how it is going to classify? Give an example for each of the classifications.

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Section 3-2
Solve Systems
Algebraically

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Graphing gives approximate values for the solution most of the time. Therefore, we are going to look at how to get exact solutions to systems using Algebra.

- 2 Methods:
-Substitution
-Elimination

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Solving by Substitution:

$$\begin{cases} x + 3y = 5 \\ -2x - 4y = -5 \end{cases} \quad \begin{aligned} X &= 5 - 3(2.5) \\ X &= 5 - 7.5 \\ X &= -2.5 \end{aligned}$$

$$\begin{aligned} -2(5 - 3y) - 4y &= -5 \\ -10 + 6y - 4y &= -5 \quad (-2.5, 2.5) \\ -10 + 2y &= -5 \\ +10 \quad +10 \\ 2y &= 5 \quad y = 2.5 \end{aligned}$$

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An online music company offers 15 downloads for \$19.75 and 40 downloads for \$43.50. Each price includes the same one-time registration fee. What is the cost of each download and the registration fee?

$$\begin{aligned} X + 15y &= 19.75 \\ X + 40y &= 43.50 \end{aligned}$$

$$\begin{aligned} y &= 19.75 - 15(.95) \\ y &= \$5.50 \end{aligned}$$

$$\begin{aligned} 19.75 - 15y + 40y &= 43.50 \\ 19.75 + 25y &= 43.50 \\ 25y &= 23.75 \\ y &= .95 \end{aligned}$$

x - fee
y - download price

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Solving a System using Elimination
-try to eliminate a variable by creating inverses of each other.

$$\begin{cases} -2x + 8y = -8 \\ 5x - 8y = 20 \end{cases} \quad (4, 0)$$

$$\begin{aligned} 3x &= 12 \\ \frac{3x}{3} &= \frac{12}{3} \\ X &= 4 \end{aligned}$$

$$\begin{aligned} 5(4) - 8y &= 20 \\ 20 - 8y &= 20 \\ -8y &= 0 \\ y &= 0 \end{aligned}$$

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Solve using elimination:

$$\begin{cases} 3x + 7y = 15 \\ 5x + 2y = -4 \end{cases} \quad (-2, 3)$$

$$\begin{array}{r} -6x - 14y = -30 \\ + \quad 5x + 2y = -4 \\ \hline -x - 12y = -34 \end{array}$$

$$\begin{array}{r} -x - 12y = -34 \\ + \quad 4x + 8y = -8 \\ \hline 3x - 4y = -40 \end{array}$$

$$\begin{array}{r} 3x - 4y = -40 \\ - \quad 3x + 7y = 15 \\ \hline -11y = -55 \\ y = 5 \end{array}$$

$$\begin{array}{r} 5x + 2y = -4 \\ + \quad 10 \\ \hline 5x + 12 = -4 \\ 5x = -16 \\ x = -\frac{16}{5} \end{array}$$

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Solve:

$$\begin{cases} -x + y = -2 + x \\ 2x - 2y = 0 \end{cases}$$

$$\begin{array}{r} 4x + y = -2 \\ -2(2x - 2y = 0) \\ \hline -4x + 4y = 0 \\ + \quad 4x + y = -2 \\ \hline 5y = -2 \\ y = -\frac{2}{5} \end{array}$$

$$\begin{array}{r} 4x + y = -2 \\ + \quad \frac{4}{5} \\ \hline 4x + \frac{4}{5} = -2 \\ 4x = -2 - \frac{4}{5} \\ 4x = -\frac{10}{5} - \frac{4}{5} \\ 4x = -\frac{14}{5} \\ x = -\frac{7}{10} \end{array}$$

No Sol. $\frac{-10}{5} + \frac{4}{5}$

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Hwk:
 pg. 146 - 148
 #10, 14, 26, 28,
 32 - 52 (4th), 53, 54,
 58, 59 - 61 all, 63, 64

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