Bellwork   Hon Alg 2   Wednesday, October 12, 2016

1. Without actually solving state the number of solutions to this system of linear equations.

$6x - 8y = 24$
$15x - 20y = 40$

2. In her purse Amani has $100. There are only $5 bills and $10 bills. There is a total 14 bills. Write and solve a system of equations in order to find the number of $5 bills and $10 bills in her purse.

Equations:

$5 bills: _____   # $10 bills: _____

3. Solve each of these systems of equations. You must use the following methods at least once each: Elimination, Substitution, and Matrices. State the method you use and write your answer as an ordered pair or triple.

a)
$3x - 2y = 23$
$7x + 10y = -5$

b)
$2d + 6e = -42$
$9d + 8e = -56$

c)
$-4x + y - 5z = \cancel{56}\ -76$
$3y + 8z = 63$
$x - 9y = \cancel{20}\ 34$

d)
$7.4x + 3.6y = 43.88$
$8.1x - 4.5y = 4.14$

$6x - 8y = 24 \longrightarrow y = \dfrac{24 - 6x}{-8} = -3 + \tfrac{3}{4}x$

$15x - 20y = 40 \longrightarrow y = \dfrac{40 - 15x}{-20} = -2 + \tfrac{3}{4}x$

> parallel   **NO SOL**

$F = $ # $5 bills
$T = $ # $10 bills

Equations:

$5 bills: **8**   # $10 bills: **6**

$\cancel{F + T = 100}$
$F + T = 14$
$5F + 10T = 100$

$\longrightarrow 5(F + T = 14) \rightarrow 5F + 5T = 70$
$\qquad\qquad\qquad\quad\ -5F + 10T = 100$
$\qquad\qquad\qquad\qquad -5T = -30 \quad T = 6$

a) ELIMINATION
$5(\ 3x - 2y = 23\ )$
$7x + 10y = -5$

$15x - 10y = 115$
$+\ 7x + 10y = -5$
_____
$22x = 110$
$x = 5 \quad (5, -4)$

b) substitution
$2d + 6e = -42$
$9d + 8e = -56$

$d = \dfrac{-42 - 6e}{2} = -21 - 3e$

$9(-21 - 3e) + 8e = -56$
$-189 - 27e + 8e = -56$
$-19e = 133 \quad e = -7 \quad (0, -7)$

c) MATRICES
$-4x + y - 5z = \cancel{56}\ -76$
$3y + 8z = 63$
$x - 9y = \cancel{20}\ 34$

$(7, -3, 9)$

d) MATRICES
$7.4x + 3.6y = 43.88$
$8.1x - 4.5y = 4.14$

$(3.4, 5.2)$

1