

1. (10 pts) Determine whether $(5, 2)$ is in the solution set for the following system:

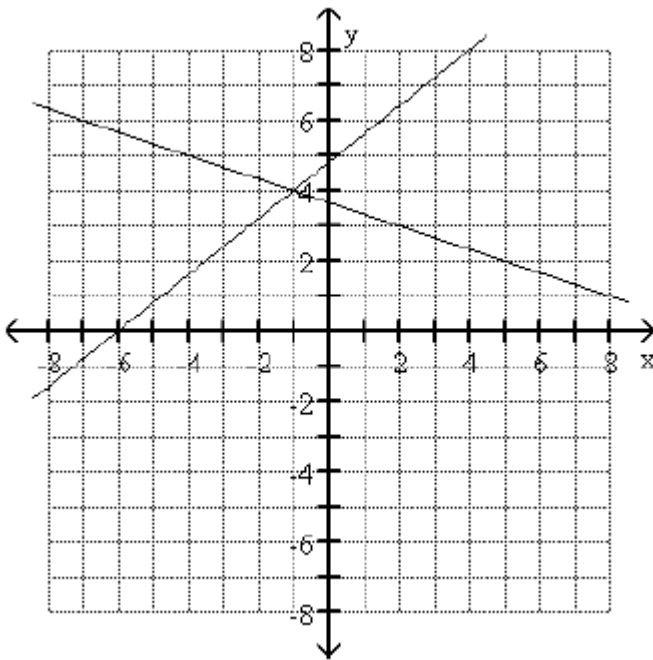
$$x + y = 7$$

$$x - y = 3$$

2. (10 pts) Solve the following system by inspecting the graph of the equations:

$$x + 3y = 11$$

$$4x - 5y = -24$$



3. (10 pts) Solve the following system by any method:

$$x + y = 2$$

$$x - y = -12$$

4. (10 pts) Solve the following system by addition (or by Gaussian Elimination).

$$\begin{aligned}x - 6y &= -14 \\ -6x - 7y &= -45\end{aligned}$$

5. (10 pts) Classify the systems as independent, inconsistent or dependent. You should be able to decide, by inspection (on these 2x2s).

a.
$$\begin{aligned}x + y &= 2 \\ x + y &= 7\end{aligned}$$

b.
$$\begin{aligned}x + y &= 2 \\ 3x + 3y &= 6\end{aligned}$$

c.
$$\begin{aligned}x + y &= 2 \\ x + 2y &= 7\end{aligned}$$

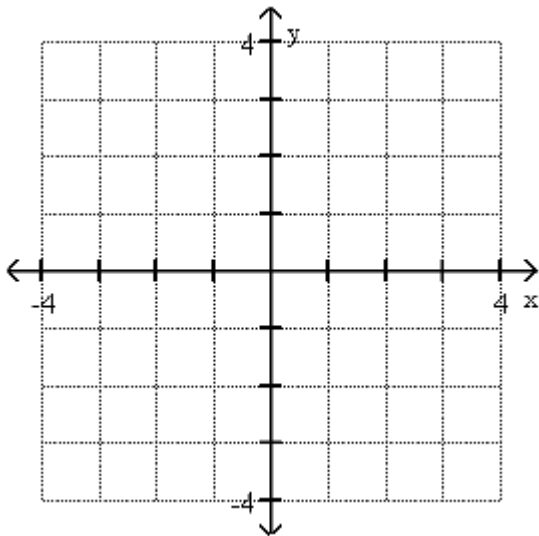
6. (10 pts) Solve the following word problem. (Take it all the way to solution.)

A shopkeeper orders 42 pounds of cashews and peanuts. If he orders 12 less pounds of cashews, how many pounds of peanuts did he order?

7. (10 pts) Graph the solution set of the system.

$$2x + y \geq 4$$

$$x \geq 1$$



8. (10 pts) Solve the system of equations with matrices and Gaussian Elimination:

$$x + y + z = 6$$

$$x - y + 5z = 20$$

$$4x + y + z = 0$$

9. (10 pts) Solve the system of nonlinear equations:

$$y = 27^x$$

$$x = \log_3(3y)$$

10. (10 pts) Set up the following word problem (variables, system, augmented matrix). For 10 bonus points, *solve* the word problem.

Linda invests \$25,000 for one year. Part is invested at 5%, another part at 6%, and the rest at 8%. The total income from all 3 investments is \$1600. The combined income from the 5% and 6% investments is the same as the income from the 8% investment. Find the amount invested at each rate.