MPM 2D

SOLVING A LINEAR SYSTEM BY ELIMINATION

To solve a linear system by <u>elimination</u>, follow these steps:

<u>Example 1:</u> **Solve the system:** $2x - 3y = 5$
$y = 13 - 3x$

① Number the 2 equations.
Rewrite the equations, one above the other, so that the x terms are lined up, the y terms are lined up and the constants are lined up.

② Multiply each equation by a value to equalize either the x terms or equalize the y terms. **Indicate the *<u>MULTIPLIER</u>* for each equation.**

③ Add OR subtract the 2 equations to cancel one of the variables, and then solve the remaining equation for the unknown variable.

④ Substitute the answer from step 3 into either equation in step 2 to solve for the other unknown variable.

⑤ Check your solution with the original equations. State the coordinates of the point of intersection.

EXAMPLE 2: Solve the linear system by elimination. Check your solution.

$$4x - y + 21 = 0$$
$$6x + 5y = 1$$

EXAMPLE 3: Solve the linear system by elimination.

$$x + 2(y - 5) = 0$$
$$2(x - 3) = 3y$$

EXAMPLE 4: Solve the linear system by elimination.

$$2x - 3(y + 2) = 5$$
$$5(x - 2) + 2(2y + 1) = 8$$

EXAMPLE 5: Solve the linear system by elimination.

$$2x + 4(y + 2) = 0$$
$$\frac{x}{4} = 2 - \frac{y}{2}$$