Solving linear equations

Linear equations are things like $2x + 3 = 9$, where variables are all to the first power. To solve these, first get the desired variable alone on one side by adding or subtracting terms and then divide by its coefficient. Here are some examples.

Example 1   Solve $2x + 3 = 9$ for x.

Solution: First subtract 3 from each side to get $2x = 6$. Then divide both sides by 2 to get $x = 3$.

Example 2   Solve $9 = 4 - 3x$ for x.

Solution: First subtract 4 to get $5 = -3x$. Then divide both sides by -3 to get $x = -5/3$.

Example 3   Solve $y = \frac{9}{5}x - 32$ for x.

Solution: First add 32 to both sides to get $y + 32 = \frac{9}{5}x$. Then multiply both sides by 5/9 (or divide both sides by 9/5) to get $x = \frac{5}{9}(y + 32)$.

Exercises

Solve the following equations for x.

1. $7x - 21 = 0$

2. $2 + 9x = 6$

3. $3x + 4(y - 1) = 7$.

Answers

1. Add 21 to both sides to get $7x = 21$. Then divide both sides by 7 to get $x = 3$.

2. Subtract 2 from both sides to get $9x = 4$. Then divide both sides by 9 to get $x = 4/9$.

3. Subtract $4(y - 1)$ from both sides to get $3x = 7 - 4(y - 1)$. Then divide both sides by 3 to get $x = (7 - 4(y - 1))/3$. This can be simplified into $x = (12 - 4y)/3$.