Distribute, Combine, & Solve

Equations

Goal: Isolate the variable by using inverse operations.

Examples:

1) \(-12(x+5) = 144\) or \(-12\left(x+\frac{5}{6}\right) = \frac{144}{-12}\)

\[-12x - 60 = 144\]

\[-12x = 204\]

\[-\frac{12x}{-12} = \frac{204}{-12}\]

\[-x = -17\]

\[x = 17\]

Same answer either way.

2) \(-5(3x-2) = 70\) or \(-5\left(3x-\frac{2}{3}\right) = \frac{70}{-5}\)

\[-15x + 10 = 70\]

\[-15x = 60\]

\[-\frac{15x}{-15} = \frac{60}{-15}\]

\[x = -4\]

\[3x - 2 = -14\]

\[3x = -12\]

\[x = -4\]
3) $9(x+2) + 3x = -6$
   \[9x + 18 + 3x = -6\]
   \[12x + 18 = -6\]
   \[-18\]
   \[12x = -24\]
   \[x = -2\]

4) $8 = 8y - 4(y+8)$
   \[8 = 8y - 4(y+8)\]
   \[8 = 8y - 4y - 32\]
   \[8 = 4y - 32\]
   \[40 = 4y\]
   \[y = 10\]

5) $-13 = 5(1+4m) - 2m$
   \[-13 = 5 + 20m - 2m\]
   \[-13 = 5 + 18m\]
   \[-13\]
   \[-18 = 18m\]
   \[m = -1\]