

Solving Linear

vocab

- identity: an equation that is always true (for all x 's)

[ex] $-4(x+5) - 1 = -4x - 21$

- conditional: an equation that is true for some x 's

[ex] $4x - 7 = 5x + 9$

Solving

1. $3x - 4 = 2(x+7)$
 $3x - 4 = 2x + 14$
 $x = 18$

2. $5(x-1) + 2 = 5x - 3$
 $5x - 1 + 2 = 5x - 3$
 $5x + 1 = 5x - 3$
 $0 = -4$
 no solution

3. $\frac{1}{2}(x+8) = \frac{3}{4}(x-4)$
 $\frac{1}{2}x + 4 = \frac{3}{4}x - 3$
 $7 = \frac{1}{4}x$

$28 = x$

4. $\left(\frac{3x}{2} - \frac{4}{3} = 5 + \frac{x}{6}\right) 6$

$3(3x) - 2(4) = 6(5) + x$
 $9x - 8 = 30 + x$
 $8x = 38$
 $x = \frac{38}{8}$

$x = \frac{19}{4}$

5. $\left(\frac{3}{4x} + \frac{5}{2x} = 6\right) 8x$

$2(3) + 4(5) = 48x$
 $6 + 20 = 48x$
 $26 = 48x$
 $\frac{26}{48} = x$

$\frac{13}{24} = x$