

[05-12-13-N7]

1. The following are four groups of equivalent equations. State, in each group, how the first equation can be converted to the second and the second to the third.

(a) $6x + 3 = 5 + x$
 $5x + 3 = 5$
 $5x = 2$

(b) $3x - 4 = 14 - 3x$
 $6x - 4 = 14$
 $6x = 18$

(c) $3(2x - 5) = 12$
 $2x - 5 = 4$
 $2x = 9$

(d) $3[(x - 5) + 2x] = 0$
 $x - 5 + 2x = 0$
 $x + 2x = 5$

2. Find the solution of each of the following equations.

(a) $3x - 13 = 26$ (b) $3x - 7 = 32$ (c) $4y - 9 = -5$
 (d) $8 + 3a = 11$ (e) $8 + 2x = 14$ (f) $y + 6 = 18$
 (g) $8x + 4 = 12$ (h) $2x - 10 = 8$ (i) $3x + 6 = 1$
 (j) $x + 4 = 60$ (k) $2a + 45 = 0$ (l) $7y + 3 = y + 18$
 (m) $x + 3 = 18 - 3x$ (n) $2y - 2 = 4 - y$ (o) $5x - 4 = 2x + 11$
 (p) $4x = 7 + 3x$

3. Solve the following equations.

(a) $3(x + 2) + 7(x - 1) = 12$ (b) $5(x + 1) + 3(x - 1) = 5$
 (c) $4(x - 1) - (x + 3) = 0$ (d) $3(1 - x) + 4(x - 5) = 10$
 (e) $28(x - 3) - (x - 3) = 0$ (f) $9(x - 4) + (2 + 8x) = 0$
 (g) $3x + 3(x - 3) - (4 - 4x) = 0$ (h) $3(2x - 3) - (2x + 2) = x - 3$
 (i) $3y + 6(y + 3) - (8y - 16) = 60$ (j) $3 + (4 + 4p) = 6(4 - p)$
 (k) $3(u - 3) - 3(4 + u) = 5 + u$ (l) $5 - 3(q - 7) = 2(2 - q) - 8$

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(m) $5(3 - s) - 4(s - 3) = 5 - 4s$ (n) $x(3 + x) - 3(1 + 2x) = 3 + x^2$
 (o) $n(3n - 3) - 5(3 + n) = 3n^2 + 2n + 3$
 (p) $w^2 - w(w - 3) = 12(1 + w)$

4. Solve these equations.

(a) $x^2 - 3 = 1$ (b) $2x^2 + 5 = 23$ (c) $2x^2 + 7 = 55 - x^2$
 (d) $2(x^2 + 1) = 52$ (e) $2(x^2 - 9) = 90 - x^2$ (f) $(x - 1)^2 = 4$

Exercise 6.2 (p. 158)

1. (a) Subtract x from both sides.
Subtract 3 from both sides.
(b) Add $3x$ to both sides.
Add 4 to both sides.
(c) Divide both sides by 3.
Add 5 to both sides.
(d) Divide both sides by 3.
Add 5 to both sides.

2. (a) 13 (b) 13 (c) 1
(d) 1 (e) 3 (f) 12
(g) 1 (h) 9 (i) $-\frac{5}{3} = -1\frac{2}{3}$
(j) 56 (k) $-22\frac{1}{2}$ (l) $2\frac{1}{2}$
(m) $3\frac{3}{4}$ (n) 2 (o) 5
(p) 7

3. (a) $1\frac{3}{10}$ (b) $\frac{3}{8}$ (c) $2\frac{1}{3}$
(d) 27 (e) 3 (f) 2
(g) $1\frac{3}{10}$ (h) $2\frac{2}{3}$ (i) 26
(j) $1\frac{7}{10}$ (k) -26 (l) 30
(m) $4\frac{2}{5}$ (n) -2 (o) $-\frac{9}{5}$
(p) $-\frac{4}{3}$

4. (a) ± 2 (b) ± 3 (c) ± 4
(d) ± 5 (e) ± 6 (f) -1, 3