Elementary Algebra Skill

Solving Quadratic Equations: Completing the Square

Solve each equation by completing the square.

1) $x^2 + 2x - 24 = 0$

2) $p^2 + 12p - 54 = 0$

3) $x^2 - 8x + 15 = 0$

4) $r^2 + 18r + 56 = 0$

5) $m^2 - 6m - 55 = 0$

6) $m^2 - 4m - 91 = 0$

7) $m^2 + 16m - 32 = -7$

8) $r^2 - 8r = -8$

9) $n^2 = -14n - 37$

10) $n^2 - 2n = 15$

11) $x^2 + 15x + 15 = 2 + x$

12) $-3n^2 + 4n - 59 = -4n^2$

13) $5n^2 - 20n + 6 = 0$

14) $3a^2 - 6a - 34 = 0$

15) $3x^2 - x - 3 = 0$

16) $2v^2 + 5v - 7 = 0$

17) $4n^2 + 11n = 15$

18) $9a^2 - 21 = 13a$

19) $3m^2 - 10m + 11 = 4$

20) $3m^2 - 16m - 2 = -7$

Answers to Solving Quadratic Equations: Completing the Square

1) $\{4, -6\}$
2) $\{-6 + 3\sqrt{10}, -6 - 3\sqrt{10}\}$
3) $\{5, 3\}$
4) $\{-4, -14\}$
5) $\{11, -5\}$
6) $\{2 + \sqrt{95}, 2 - \sqrt{95}\}$
7) $\{-8 + \sqrt{89}, -8 - \sqrt{89}\}$
8) $\{4 + 2\sqrt{2}, 4 - 2\sqrt{2}\}$
9) $\{-7 + 2\sqrt{3}, -7 - 2\sqrt{3}\}$
10) $\{5, -3\}$
11) $\{-1, -13\}$
12) $\{-2 + 3\sqrt{7}, -2 - 3\sqrt{7}\}$
13) $\left\{\frac{10 + \sqrt{70}}{5}, \frac{10 - \sqrt{70}}{5}\right\}$
14) $\left\{\frac{3 + \sqrt{111}}{3}, \frac{3 - \sqrt{111}}{3}\right\}$
15) $\left\{\frac{1 + \sqrt{37}}{6}, \frac{1 - \sqrt{37}}{6}\right\}$
16) $\left\{1, -3\frac{1}{2}\right\}$
17) $\left\{1, -3\frac{3}{4}\right\}$
18) $\left\{\frac{13 + 5\sqrt{37}}{18}, \frac{13 - 5\sqrt{37}}{18}\right\}$
19) $\left\{2\frac{1}{3}, 1\right\}$
20) $\left\{5, \frac{1}{3}\right\}$