Intermediate Algebra Skill

Solving Equations by Factoring

Solve each equation.

1) $x^4 + 12x^2 + 35 = 0$

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

3) $x^4 - 8x^2 + 16 = 0$

4) $x^6 - 64 = 0$

5) $2x^4 - x^2 - 15 = 0$

6) $3x^4 + 13x^2 - 30 = 0$

7) $5x^4 - 42x^2 - 27 = 0$

8) $5x^4 - 26x^2 + 5 = 0$

9) $9x^6 + 18x^4 - 25x^2 - 50 = 0$

10) $2x^6 - 3x^4 - 18x^2 + 27 = 0$

11) $5x^6 + 3x^4 - 125x^2 - 75 = 0$

12) $4x^6 - 16x^4 - x^2 + 4 = 0$

Answers to Solving Equations by Factoring

1) $\left\{i\sqrt{5}, -i\sqrt{5}, i\sqrt{7}, -i\sqrt{7}\right\}$ 2) $\left\{2, i, -i\right\}$ 3) $\left\{-2 \text{ mult. } 2, 2 \text{ mult. } 2\right\}$

4) $\left\{-2, 1 + i\sqrt{3}, 1 - i\sqrt{3}, 2, -1 + i\sqrt{3}, -1 - i\sqrt{3}\right\}$

5) $\left\{\dfrac{i\sqrt{10}}{2}, -\dfrac{i\sqrt{10}}{2}, \sqrt{3}, -\sqrt{3}\right\}$

6) $\left\{\dfrac{\sqrt{15}}{3}, -\dfrac{\sqrt{15}}{3}, i\sqrt{6}, -i\sqrt{6}\right\}$ 7) $\left\{\dfrac{i\sqrt{15}}{5}, -\dfrac{i\sqrt{15}}{5}, -3, 3\right\}$ 8) $\left\{\dfrac{\sqrt{5}}{5}, -\dfrac{\sqrt{5}}{5}, \sqrt{5}, -\sqrt{5}\right\}$

9) $\left\{i\sqrt{2}, -i\sqrt{2}, \dfrac{i\sqrt{15}}{3}, -\dfrac{i\sqrt{15}}{3}, \dfrac{\sqrt{15}}{3}, -\dfrac{\sqrt{15}}{3}\right\}$ 10) $\left\{\dfrac{\sqrt{6}}{2}, -\dfrac{\sqrt{6}}{2}, i\sqrt{3}, -i\sqrt{3}, \sqrt{3}, -\sqrt{3}\right\}$

11) $\left\{\dfrac{i\sqrt{15}}{5}, -\dfrac{i\sqrt{15}}{5}, i\sqrt{5}, -i\sqrt{5}, \sqrt{5}, -\sqrt{5}\right\}$ 12) $\left\{-2, 2, \dfrac{i\sqrt{2}}{2}, -\dfrac{i\sqrt{2}}{2}, \dfrac{\sqrt{2}}{2}, -\dfrac{\sqrt{2}}{2}\right\}$