

## 1.4 Polynomial Equations WS 3

**Find all roots.**

1)  $x^4 + x^2 - 6 = 0$

2)  $x^3 + 125 = 0$

3)  $x^3 - 5x^2 - 5x + 25 = 0$

4)  $x^4 + x = 0$

5)  $x^5 + 2x^3 - 48x = 0$

6)  $x^3 - 5x^2 + 4x - 20 = 0$

$$7) x^4 - 36 = 0$$

$$8) x^3 - 64 = 0$$

$$9) x^3 + 2x^2 + 3x + 6 = 0$$

$$10) x^4 - x^2 - 72 = 0$$

$$11) x^3 + 9x^2 + 20x = 0$$

$$12) x^3 + 27 = 0$$

## 1.4 Polynomial Equations WS 3

**Find all roots.**

1)  $x^4 + x^2 - 6 = 0$

$$\{\sqrt{2}, -\sqrt{2}, i\sqrt{3}, -i\sqrt{3}\}$$

2)  $x^3 + 125 = 0$

$$\left\{-5, \frac{5 + 5i\sqrt{3}}{2}, \frac{5 - 5i\sqrt{3}}{2}\right\}$$

3)  $x^3 - 5x^2 - 5x + 25 = 0$

$$\{5, \sqrt{5}, -\sqrt{5}\}$$

4)  $x^4 + x = 0$

$$\left\{0, -1, \frac{1 + i\sqrt{3}}{2}, \frac{1 - i\sqrt{3}}{2}\right\}$$

5)  $x^5 + 2x^3 - 48x = 0$

$$\{0, \sqrt{6}, -\sqrt{6}, 2i\sqrt{2}, -2i\sqrt{2}\}$$

6)  $x^3 - 5x^2 + 4x - 20 = 0$

$$\{5, 2i, -2i\}$$

$$7) x^4 - 36 = 0$$

$$\{\sqrt{6}, -\sqrt{6}, i\sqrt{6}, -i\sqrt{6}\}$$

$$8) x^3 - 64 = 0$$

$$\{4, -2 + 2i\sqrt{3}, -2 - 2i\sqrt{3}\}$$

$$9) x^3 + 2x^2 + 3x + 6 = 0$$

$$\{-2, i\sqrt{3}, -i\sqrt{3}\}$$

$$10) x^4 - x^2 - 72 = 0$$

$$\{3, -3, 2i\sqrt{2}, -2i\sqrt{2}\}$$

$$11) x^3 + 9x^2 + 20x = 0$$

$$\{0, -5, -4\}$$

$$12) x^3 + 27 = 0$$

$$\left\{-3, \frac{3 + 3i\sqrt{3}}{2}, \frac{3 - 3i\sqrt{3}}{2}\right\}$$