

## 1.4 Polynomial Equations WS 4

**Find all roots.**

1)  $x^4 - 9x^2 + 20 = 0$

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

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

4)  $x^4 - 81 = 0$

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

6)  $x^3 - 125 = 0$

$$7) x^3 - 4x^2 + 4x - 16 = 0$$

$$8) x^4 - 5x^2 - 6 = 0$$

$$9) x^3 + 27 = 0$$

$$10) 2x^5 + 13x^3 - 7x = 0$$

$$11) -27x^3 + 125 = 0$$

$$12) 5x^3 - 15x^2 + 4x - 12 = 0$$

## 1.4 Polynomial Equations WS 4

**Find all roots.**

1)  $x^4 - 9x^2 + 20 = 0$

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

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

$\{-4, \sqrt{2}, -\sqrt{2}\}$

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

$\{0, -4, \sqrt{2}, -\sqrt{2}\}$

4)  $x^4 - 81 = 0$

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

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

$\{0, -1, -2\}$

6)  $x^3 - 125 = 0$

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

$$7) x^3 - 4x^2 + 4x - 16 = 0$$

$$\{4, 2i, -2i\}$$

$$8) x^4 - 5x^2 - 6 = 0$$

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

$$9) x^3 + 27 = 0$$

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

$$10) 2x^5 + 13x^3 - 7x = 0$$

$$\left\{0, \frac{\sqrt{2}}{2}, -\frac{\sqrt{2}}{2}, i\sqrt{7}, -i\sqrt{7}\right\}$$

$$11) -27x^3 + 125 = 0$$

$$\left\{\frac{5}{3}, \frac{-5 - 5i\sqrt{3}}{6}, \frac{-5 + 5i\sqrt{3}}{6}\right\}$$

$$12) 5x^3 - 15x^2 + 4x - 12 = 0$$

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