

## 1.4 Polynomial Equation WS 2

①  $x = 0, 4, -3$

②  $x = \pm 4, 2$

③  $x = 0, 3, \pm\sqrt{6}$

④  $x = 0, \pm\sqrt{10}$

⑤  $64x^3 + 27 = 0$

$$(4x+3)(16x^2-12x+9)=0$$

$$x = \frac{12 \pm \sqrt{(144) - 4(16)(9)}}{32}$$

$$x = \frac{12 \pm \sqrt{-432}}{32}$$

$$x = \frac{12 \pm 12i\sqrt{3}}{32}$$

$$x = \frac{3 \pm 3i\sqrt{3}}{8}$$

$$x = \frac{-3}{4}, \frac{3 \pm 3i\sqrt{3}}{8}$$

⑥  $x = \pm 2, 5$

⑦  $3x^3 + 2x^2 - 36x - 24 = 0$

$$x^2(3x+2) - 12(3x+2) = 0$$

$$(x^2-12)(3x+2) = 0$$

$$x = \pm\sqrt{12}$$

$$x = \pm 2\sqrt{3}, -\frac{2}{3}$$

⑧  $2x^4 - 128 = 0$

$$2(x^4 - 64) = 0$$

$$2(x^2-8)(x^2+8) = 0$$

$$x = \pm\sqrt{8} \quad x = \pm\sqrt{-8}$$

$$x = \pm 2\sqrt{2}, \pm 2i\sqrt{2}$$

⑨  $x = \pm 1, \pm i, \pm\sqrt{2}$

⑩  $9x^5 = 27x^3$

$$9x^5 - 27x^3 = 0$$

$$9x^3(x^2-3) = 0$$

$$x = 0, \pm\sqrt{3}$$

⑪  $8x^3 + 8 = 0$

$$8(x^3+1) = 0$$

$$8(x+1)(x^2-x+1) = 0$$

$$x = \frac{1 \pm \sqrt{1-4(1)(1)}}{2}$$

$$x = \frac{1 \pm i\sqrt{3}}{2}$$

$$x = -1, \frac{1 \pm i\sqrt{3}}{2}$$

⑫  $-4x^4 + 8x^3 + 60x^2 = 0$

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

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

$$x = 0, 5, -3$$