

2.3

1) $(z - 3)^2 = -64$

$$(z - 3)^2 + 64 = (z - 3)^2 - 64i^2 = ((z - 3) + 8i)((z - 3) - 8i) = (z - 3 + 8i)(z - 3 - 8i) = 0$$

$$z = 3 - 8i \quad \text{ou} \quad z = 3 + 8i$$

2) $(2z - 5)^2 = -25$

$$(2z - 5)^2 + 25 = (2z - 5)^2 - 25i^2 = ((2z - 5) + 5i)((2z - 5) - 5i) = (2z - 5 + 5i)(2z - 5 - 5i) = 0$$

$$z = \frac{5 - 5i}{2} = \frac{5}{2} - \frac{5}{2}i \quad \text{ou} \quad z = \frac{5 + 5i}{2} = \frac{5}{2} + \frac{5}{2}i$$

3) $z^2 + 6z + 25 = 0$

$$\Delta = 6^2 - 4 \cdot 1 \cdot 25 = 36 - 100 = -64 = 64i^2 = (8i)^2$$

$$z = \frac{-6 + 8i}{2} = -3 + 4i \quad \text{ou} \quad z = \frac{-6 - 8i}{2} = -3 - 4i$$

4) $z^2 - 8z + 32 = 0$

$$\Delta = (-8)^2 - 4 \cdot 1 \cdot 32 = 64 - 128 = -64 = 64i^2 = (8i)^2$$

$$z = \frac{-(-8) + 8i}{2} = 4 + 4i \quad \text{ou} \quad z = \frac{-(-8) - 8i}{2} = 4 - 4i$$

5) $2z^2 + 10z + 13 = 0$

$$\Delta = 10^2 - 4 \cdot 2 \cdot 13 = 100 - 104 = -4 = 4i^2 = (2i)^2$$

$$z = \frac{-10 + 2i}{4} = -\frac{10}{4} + \frac{2}{4}i = -\frac{5}{2} + \frac{1}{2}i \quad \text{ou} \quad z = \frac{-10 - 2i}{4} = -\frac{5}{2} - \frac{1}{2}i$$

6) $16z^2 - 16z + 29 = 0$

$$\Delta = (-16)^2 - 4 \cdot 16 \cdot 29 = -1600 = 1600i^2 = (40i)^2$$

$$z = \frac{-(-16) + 40i}{32} = \frac{16}{32} + \frac{40}{32}i = \frac{1}{2} + \frac{5}{4}i \quad \text{ou} \quad z = \frac{-(-16) - 40i}{32} = \frac{1}{2} - \frac{5}{4}i$$