

$$x^2 + (2 + 2i)x - (12 - 18i) = 0$$

$$D = (2 + 2i)^2 - 4(-(12 - 18i))$$

$$D = 4 + 8i + 4i^2 + 4(12 - 18i)$$

$$D = 4 + 8i - 4 + 48 - 72i$$

$$D = 48 - 64i$$

$$z = \sqrt{D} \mid \uparrow^2$$

$$z \in \mathbb{C}; z = a + bi$$

$$z^2 = D = 48 - 64i$$

$$a^2 - b^2 + 2abi = 48 - 64i$$

$$\left| \begin{array}{rcl} a^2 - b^2 & = & 48 \\ 2abi & = & -64i \\ a^2 - b^2 & = & 48 \\ a & = & \frac{-32}{b} \end{array} \right|$$

$$a^2 - b^2 = 48$$

$$\left(\frac{-32}{b}\right)^2 - b^2 = 48$$

$$b^2 - \left(\frac{-32}{b}\right)^2 + 48 = 0 \mid \times b^2$$

$$b^4 + 48b^2 - 32^2 = 0$$

$$y = b^2, y \geq 0$$

$$y^2 + 48y - 32^2 = 0$$

$$D_y = 48^2 - 4(-32^2)$$

$$D_y = 48^2 + 4 \times 32^2$$

$$D_y = 2^2 \times 3^2 \times 8^2 + 2^2 \times 4^2 \times 8^2$$

$$D_y = 2^2 8^2 (3^2 + 4^2) = 2^2 8^2 5^2$$

$$\sqrt{D_y} = 2 \times 5 \times 8 = 80$$

$$y_1 = \frac{-48+80}{2} = -24 + 40 = 16 > 0$$

$$y_2 = \frac{-48+80}{2} = -24 - 40 = -64 \leq 0$$

$$b^2 = 16, b = \pm 4$$

$$a = \frac{-32}{\pm 4}, a = \mp 8$$

$$z = \mp 8 \pm 4i$$

$$x_1 = \frac{-(2+2i)+(-8+4i)}{2} = \frac{-2-2i-8+4i}{2} = \frac{-10+2i}{2} = -5 + i$$

$$x_2 = \frac{-(2+2i)-(-8+4i)}{2} = \frac{-2-2i+8-4i}{2} = \frac{-6-6i}{2} = 3 - 3i$$

$$x_3 = \frac{-(2+2i)+(8-4i)}{2} = \frac{-2-2i+8-4i}{2} = \frac{-6-6i}{2} = 3 - 3i$$

$$x_4 = \frac{-(2+2i)-(-8-4i)}{2} = \frac{-2-2i-8+4i}{2} = \frac{-10+2i}{2} = -5 + i$$

$$x_1 = x_4, x_2 = x_3$$