

94 學年度 數學科教材教法

複數的乘法與除法 - 942209005 天文所 廖家賢

1. $(3+4i)(12-5i) = 3 \times 12 + 3 \times (-5i) + 4i \times 12 + 4i \times (-5i) = 56 + 33i$

2. $\frac{2-3i}{3+2i} =$

$$\frac{2-3i}{3+2i} \times \frac{3-2i}{3-2i} = \frac{2 \times 3 + 2 \times (-2i) + (-3i) \times 3 + (-3i)(-2i)}{3^2 - (2i)^2} = \frac{6 - 4i - 9i - 6}{13} = -i$$

3. $\frac{\sqrt{2}}{\sqrt{-2}} + \sqrt{\frac{2}{-2}} + \sqrt{-2} \cdot \sqrt{-2} + \sqrt{(-2) \cdot (-2)} =$

$$2 \frac{\sqrt{2}}{\sqrt{2 \times -1}} + \sqrt{(-2)^2} + \sqrt{4} = 2 \frac{\sqrt{2}}{\sqrt{2}\sqrt{-1}} + -2 + 2 = \frac{2}{i} = \frac{2}{i} \times \frac{-i}{-i} = -2i$$

4. $\frac{-2+i\sqrt{3}}{i\sqrt{3}-\sqrt{4}} \times \sqrt{-7} = (\sqrt{7})i$

5. $6i\sqrt{\frac{1}{-3}} = -2\sqrt{3}$