

# Complex Numbers Review

$$73/ \quad (2 + 9i^5) + (1 - 9i^6) - (3 + i^7) \quad \frac{1}{4} = 0.25$$

$$\frac{5}{4} = 1.25 \quad \frac{6}{4} = 1.5 \quad 0.25i = i$$

$$(2 + 9i) + (1 + 9) + (3 + i) \quad 0.5i^2 = -1$$

$$= 9 + 5i \quad 0.75i^3 = -i$$

$$\quad \quad \quad 0.00i^4 = 1$$

---

c)  $2i^{35} - 3i^{109} + i^{200}$

$$\frac{35}{4} = 8.75 \quad \frac{109}{4} = 27.25 \quad \frac{200}{4} = 50.0$$

$$2i^3 - 3i + 1$$

$$-2i - 3i + 1 = -5i + 1$$

$$f) \frac{-7+6i}{9-4i} \cdot \frac{(9+4i)}{(9+4i)} \text{ FOIL } \quad \frac{7+2\sqrt{3}}{8-3\sqrt{3}} \cdot \frac{(8+3\sqrt{3})}{(8+3\sqrt{3})} \text{ FL}$$

$$= \frac{-63 - 28i + 54i + 24i^2}{81 + 16i^2}$$

$$= \frac{-87 + 26i}{97}$$

$$\begin{aligned} & \sqrt{-3} \cdot \sqrt{-48} \\ & \quad \quad \quad 16 \cdot 3 \\ & i\sqrt{3} \cdot 4i\sqrt{3} \\ & = -4i^2 \cdot 3 \\ & = \boxed{-12} \end{aligned}$$

$$\frac{8+2i \cdot i}{4i \cdot i}$$

$$= \frac{8i + 2i^2}{-4i^2} = \frac{-8i + 2}{+4} = \frac{-4i + 1}{2}$$

Review  
#3

$$\frac{7\sqrt{60}}{35\sqrt{6}} = \frac{\sqrt{10}}{5}$$

---

$$\begin{aligned} 9) \quad & (2i)^3 (3i)^2 \\ & = 8i^3 \cdot 9i^2 \\ & = 72i^5 = \boxed{72i} \end{aligned}$$

$$\begin{aligned} & (4+6i) + (2+7i) \\ & = 2 + 13i \end{aligned}$$

$$(3 + 2i)^2$$

$$= (3 + 2i)(3 + 2i)$$

FOIL

$$x = -4 \pm \sqrt{2}$$

Solve.

$$5(x+4)^2 + 17 = 37$$

-17   -17

$$\frac{5(x+4)^2}{5} = \frac{20}{5}$$

$$\sqrt{(x+4)^2} = \sqrt{4}$$

$$x+4 = \pm 2$$

$$x = -4 \pm 2$$

$$x = -2 \quad x = -6$$

$$x = -2, 6$$