

**Homework** 1.2 Imaginary Numbers

*Rewrite each expression in standard form.*

1.  $i^2$

2.  $i^{14}$

3.  $i^7$

4.  $i^{71}$

5.  $i^{204}$

6.  $i^{167}$

*Add, subtract, multiply and divide complex numbers.*

7.  $(3 + i^2) + i^4$

8.  $(5 + i^3) - (3 - i^3)$

9.  $(2i^2)(3i)^3$

10.  $(5 - 6i)(7 - 2i)$

11.  $(-3 + i)(8 + 5i)$

12.  $(2 + 3i)(-6 - 2i)$

13.  $\frac{-4i}{3-3i}$

14.  $\frac{4+2i}{2+4i}$

15. Which of the following is NOT a real number?

(a) 6

(b)  $\sqrt{-36}$

(c)  $\sqrt{6}$

(d)  $6i^2$

Explain your choice: \_\_\_\_\_

Rewrite each expression in standard form.

1.  $i^2$

$$= -1$$

2.  $i^{14}$

$$= -1$$

3.  $i^7$

$$= -i$$

4.  $i^{71}$

$$= -i$$

5.  $i^{204}$

$$= 1$$

6.  $i^{167}$

$$= -i$$

Add, subtract, multiply and divide complex numbers.

7.  $(3 + i^2) + i^4$

$$= 3$$

8.  $(5 + i^3) - (3 - i^3)$

$$= 2 - 2i$$

9.  $(2i^2)(3i)^3$

$$= 108i$$

10.  $(5 - 6i)(7 - 2i)$

$$= 23 - 52i$$

11.  $(-3 + i)(8 + 5i)$

$$= -29 - 7i$$

12.  $(2 + 3i)(-6 - 2i)$

$$= -6 - 22i$$

13.  $\frac{-4i}{3-3i}$

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

14.  $\frac{4+2i}{2+4i}$

$$= \frac{4}{5} - \frac{3}{5}i$$

15. Which of the following is NOT a real number?

(a) 6

(b)  $\sqrt{-36}$ (c)  $\sqrt{6}$ (d)  $6i^2$ 

Explain your choice:  $\sqrt{-36} = 6i$ , which is an imaginary number. Imaginary Numbers are not real numbers.