

Complex Numbers and Solve Using Square Root Property Part 2 Practice

1. What is the value of i ?

$$i = \sqrt{-1}$$

2. What is the value of i^2 , i^3 , i^4 ?

$$i^2 = -1, i^3 = -i, i^4 = 1$$

3. What is the product of $(2 + 4i)(6 - 3i)$?

$$\begin{aligned}(2 + 4i)(6 - 3i) &= 12 - 6i + 24i - 12i^2 \\ &= 12 - 18i + 12 = 24 + 18i\end{aligned}$$

4. Find the difference of $(-10 + i) - (-6 - 5i)$.

$$\begin{aligned}(-10 + i) - (-6 - 5i) &= -10 + i + 6 + 5i \\ &= -4 + 6i\end{aligned}$$

5. Write each of the following expressions in standard form.

a. $-2 - \sqrt{-81}$

$$= -2 - 18i$$

b. $3 - \sqrt{-100}$

$$= 3 - 10i$$

c. $-\sqrt{9} - \sqrt{-36}$

$$= -3 - 6i$$

6. What is the sum of $(8 + 7i) + (-9 - 12i)$?

$$(8 + 7i) + (-9 - 12i) = -1 - 5i$$

7. Find the product of $-2i(-6+8i)$.

$$\begin{aligned} -2i(-6+8i) &= 12i - 16i^2 \\ &= 12i + 16 \\ &= 16 + 12i \end{aligned}$$

8. Simplify each of the following expressions.

a. $\sqrt{-90} = 3i\sqrt{10}$

b. $\sqrt{-200} = 10i\sqrt{2}$

9. Simplify the expression $-16 - (3+2i) + 8i$.

$$\begin{aligned} -16 - (3+2i) + 8i &= -16 - 3 - 2i + 8i \\ &= -19 + 6i \end{aligned}$$

Solve:

13. $x^2 + 324 = 0$

$$x^2 = -324$$

$$x = \pm 18i$$

14. $2x^2 + 338 = 0$

$$2x^2 = -338$$

$$x^2 = -169$$

$$x = \sqrt{-169}$$

$$x = \pm 13i$$

15. $4(x+5)^2 = -64$

$$(x+5)^2 = -16$$

$$x+5 = \sqrt{-16}$$

$$x+5 = \pm 4i$$

$$x = -5 \pm 4i$$

16. $5(x-4)^2 = -125$

$$(x-4)^2 = -25$$

$$x-4 = \sqrt{-25}$$

$$x-4 = \pm 5i$$

$$x = 4 \pm 5i$$