

HOMEWORK

TEXT:

LAST NAME	FIRST NAME	DATE
-----------	------------	------

Simplify each expression by taking the square root:

1. $\sqrt{-100}$

4. $\sqrt{81}$

2. $\sqrt{-0.49}$

5. $\sqrt{-\frac{1}{25}}$

3. $\sqrt{0.36}$

6. $\sqrt{-0.64}$

Let $c = -0.5 + 0.5i$ and the sequence z_k be defined as follows:

$$z_1 = 0$$

$$z_k = z_{k-1}^2 + c \text{ if } k > 1$$

Find the next five members of this sequence, and state them in the form $a + bi$:

7. $z_2 =$

8. $z_3 =$

9. $z_4 =$

10. $z_5 =$

11. $z_6 =$

In the following exercises, simplify each expression. Use the standard form $a + bi$ for stating the answers.

12. $(3 + 4i) + (-2 + i)$

13. $(-5 + 7i) - (4i - 9i)$

14. $5i(6 - 8i)$

15. $(-3 + 4i)(1 + 2i)$

16. $(2 + i)^2$

17. $(1 - i)(1 - 2i)(1 - 3i)$

18. i^{-2025}

19. i^{12345}

20. Find the value of the expression $2z^2 - 3z$ if $z = 1 - i$.

21. Find the value of the expression $1 - w + w^2$ if $w = -2 + i$.

22. Let the sequence a be defined as follows:

$$a_1 = i$$

$$a_n = 2(a_{n-1} + 1) \quad \text{for } n > 1$$

Find a_4

23. Given $c = 5 - i$, let the sequence b be defined as follows:

$$a_1 = 0$$

$$a_n = a_{n-1}^2 + c \quad \text{for } n > 1$$

Find a_4

In the following problems, simplify and state the answer in the standard form $a + bi$.

24. $\frac{-72 + 27i}{9i}$

25. $\frac{20 - 12i}{-4}$

26. $\frac{3 - 39i}{-6 - 7i}$

27. $\frac{-18 + 2i}{-2 - 2i}$

ANSWERS

12. $1 + 5i$

14. $40 + 30i$

16. $3 + 4i$

18. $-i$

20. $-3 - i$

21. $6 - 5i$

22. $14 + 8i$

23. $725 - 639i$

24. $3 + 8i$

26. $3 + 3i$