12-8

Practice

Sequences and Iteration

Find the first four iterates of each function using the given initial value. If necessary, round your answers to the nearest hundredth.

1. $f(x) = x^2 + 4; x_0 = 1$

2. $f(x) = 3x + 5; x_0 = -1$

3. $f(x) = x^2 - 2; x_0 = -2$

4. $f(x) = x(2.5 - x); x_0 = 3$

Find the first three iterates of the function $f(z) = 2z - (3 + i)$ for each initial value.

5. $z_0 = \boldsymbol{i}$

6. $z_0 = 3 - \boldsymbol{i}$

7. $z_0 = 0.5 + \boldsymbol{i}$

8. $z_0 = -2 - 5\boldsymbol{i}$

Find the first three iterates of the function $f(z) = z^2 + c$ for each given value of c and each initial value.

9. $c = 1 - 2\boldsymbol{i}; z_0 = 0$

10. $c = \boldsymbol{i}; z_0 = \boldsymbol{i}$

11. $c = 1 + \boldsymbol{i}; z_0 = -1$

12. $c = 2 - 3\boldsymbol{i}; z_0 = 1 + \boldsymbol{i}$

13. ***Banking*** Mai deposited $1000 in a savings account. The annual yield on the account is 5.2%. Find the balance of Mai's account after each of the first 3 years.