

# Honors Algebra II

## Worksheet 7.5

Name \_\_\_\_\_

**Write the first five terms of the sequence.**

1.  $a_0 = 2$

$$a_n = a_{n-1} + 4$$

2.  $a_0 = 7$

$$a_n = a_{n-1} - 3$$

3.  $a_0 = -1$

$$a_n = 6a_{n-1}$$

4.  $a_1 = -3$

$$a_n = 2a_{n-1} + 5$$

5.  $a_1 = 2$

$$a_n = (a_{n-1})^2 - 5$$

6.  $a_1 = 1, a_2 = 8$

$$a_n = a_{n-1} + a_{n-2}$$

**Write a recursive rule for the sequence. The sequence may be arithmetic, geometric, or neither.**

7. 2, 5, 8, 11, 14, ...

8. 26, 18, 10, 2, -6, ...

9. 4, -20, 100, -500, 2500, ...

10. 81, 27, 9, 3, 1, ...

11. -56, 28, -14, 7,  $-\frac{7}{2}, \frac{7}{4}, \dots$

12. -25, -16, -7, 2, 11, ...

13. 6, 9, 15, 24, 39, 63, ...

14. 1, 4, 3, -1, -4, -3, 1, ...

**Find the first three iterates of the function for the given initial value.**

15.  $f(x) = x + 3, x_0 = 0$

16.  $f(x) = x - 4, x_0 = 10$

17.  $f(x) = 2x - 7, x_0 = 8$

18.  $f(x) = 3x + 5, x_0 = -4$

19.  $f(x) = \frac{1}{2}x - 9, x_0 = 6$

20.  $f(x) = \frac{3}{4}x + 7, x_0 = 12$

21.  $f(x) = x^2 + 3, x_0 = 1$

22.  $f(x) = x^2 - 3x, x_0 = 1$

**In Exercises 23 and 24, use the following information.**

**Savings Account** On January 1, 2006, you have \$100 in a savings account that earns interest at a rate of 1% per month. On the last day of every month you deposit \$75 in the account, beginning in January.

23. Write a recursive rule for the account balance at the beginning of the  $n$ th month.
24. Assuming you do not withdraw any money from the account, what will the balance be on January 1, 2007?

**In Exercises 25 and 26, use the following information.**

**Layaway** You buy a \$500 television set on layaway by making a down payment of \$50. You will then pay \$30 per month, starting the next month.

25. Write a recursive rule for the total amount of money paid on the television set after  $n$  months.
26. How much will you have left to pay on the television set after 9 months?

