Equations and Sequences Review Sheet   Name _____

Solve for x.

1. $8x - 2 = 6x - 8$

   x = -3

2. $-2x + 10 = -5x + 25$

   x = 5

3. $3(4x + 1) - 4x + 3 = -18$

   x = -3

4. $-2(-4x - 3) - 5x + 3 = -3$

   x = -4

5. $2(x + 1) = 2(6x + 9) + 7$

   x = -2.3

6. $8x + 4(-x - 3) = 2(5x + 7) - 4x$

   x = -13

7. $13 = \frac{5}{2}(5x + 4)$

   x = 6/25

8. $4 = \frac{1}{8}(3x + 16)$

   x = 16/3

9. $-5 = \frac{1}{2}(6x - 1) + \frac{3}{2}x$

   x = -1

10. $-3x + \frac{1}{2}(-6x + 4) = \frac{1}{2}(-9x - 7)$

    x = 11/3

11. $\frac{3x - 6}{3} = \frac{x + 6}{2}$

    x = 10

12. $\frac{2}{x + 3} = \frac{7}{x + 7}$

    x = -7/5

13. Solve the following inequality for x. Write your answer in simplest form.

$$9x + 8 < 7x + 9$$

$$x < 1/2$$

14. Solve the following inequality for x. Write your answer in simplest form.

$$7x - 9 < 10x + 1$$

$$x > -10/3$$

15. Find the 89th term of the arithmetic sequence 25, 35, 45, … $a_{89} = 905$

16. Find the 60th term of the arithmetic sequence -27, -24, -21, … $a_{60} = 150$

17. Find the 14th term of the geometric sequence 10, 40, 160, … $a_{14} = 671088640$

18. Find the 9th term of the geometric sequence 3, -15, 75, … $a_9 = 1171875$

19. If $a_1 = 1$ and $a_n = -5a_{n-1}$ then find the value of a_6. $a_6 = -3125$

20. If $a_1 = 7$ and $a_n = a_{n-1} - 1$ then find the value of a_5. $a_5 = 3$

Write the recursive formula for a_n, the nth term of each sequence.

21. 7, 1, -5, -11, …

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

22. 2, 10, 18, 26, …

$$a_n = a_{n-1} + 8$$

23. 288, -48, 8, …

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

24. 7, 35, 175, 875, …

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

Write the explicit formula for a_n, the nth term of each sequence.

25. 19, 23, 27, …

$$a_n = 19 + 4(n - 1)$$

26. 34, 30, 26, …

$$a_n = 34 - 4(n - 1)$$

27. 6, 18, 54, …

$$a_n = 6(3)^{n-1}$$

28. 3, 12, 48, …

$$a_n = 3(4)^{n-1}$$

Write a recursive sequence that represents the sequence defined by each explicit formula.

29. $a_n = 3 + 7n$

$$a_1 = 10$$
$$a_n = a_{n-1} + 7$$

30. $a_n = 5(4)^{n-1}$

$$a_1 = 5$$
$$a_n = 4a_{n-1}$$

Write an explicit formula that represents the sequence defined by each recursive formula.

31. $a_1 = 3$
$a_n = a_{n-1} + 7$

$$a_n = 3 + 7(n-1) \quad \text{or} \quad a_n = 7n - 4$$

32. $a_1 = 12$
$a_n = -\tfrac{1}{2}a_{n-1,}$

$$a_n = 12(-\tfrac{1}{2})^{n-1}$$