

Precalculus 10.1 HW

Name _____ period _____ date _____ score _____

Evaluate.

1. $5!$ 2. $\frac{10!}{7!}$ 3. $\frac{12!}{9!3!}$

Write the first five terms of each sequence.

4. $\{a_n\} = \frac{1}{n+2}$ 5. $\{d_n\} = \left\{ (-1)^{n-1} \left(\frac{2n}{3^n+1} \right) \right\}$

Write down the n th term of the sequence suggested by each pattern.

6. $\frac{1}{2}, \frac{2}{3}, \frac{3}{4}, \frac{4}{5}, \dots$ 7. $\frac{1}{1 \cdot 2}, \frac{1}{2 \cdot 3}, \frac{1}{3 \cdot 4}, \frac{1}{4 \cdot 5}, \dots$

8. $2, -4, 6, -8, 10, \dots$

Write down the first five terms of each sequence that has been defined recursively.

9. $a_1 = 2; a_n = 3 + a_{n-1}$ 10. $a_1 = 1; a_n = n - a_{n-1}$

11. $a_1 = 5; a_n = 2a_{n-1}$ 12. $a_1 = 1; a_2 = 2; a_n = a_{n-1} \cdot a_{n-2}$

13. $a_1 = 2; a_2 = 5; a_n = na_{n-2} - a_{n-1}$

Write out each sum.

$$14. \sum_{k=1}^n (2k+1)$$

$$15. \sum_{k=0}^n \frac{1}{3^k}$$

$$16. \sum_{k=3}^n (-1)^{k+1} 2^k$$

Express each sum using summation notation.

$$17. 1^3 + 2^3 + 3^3 + \dots + 20^3$$

$$18. \frac{1}{2} + \frac{2}{3} + \frac{3}{4} + \dots + \frac{13}{13+1}$$

$$19. 3 + \frac{3^2}{2} + \frac{3^3}{3} + \dots + \frac{3^n}{n}$$

$$20. \frac{2}{3} - \frac{4}{9} + \frac{8}{27} - \dots + (-1)^{12} \left(\frac{2}{3}\right)^{11}$$

Find the sum of each sequence.

$$21. \sum_{k=1}^{50} 8$$

$$22. \sum_{k=1}^{40} k$$

$$23. \sum_{k=1}^{20} (5k + 3)$$

$$24. \sum_{k=1}^{12} (k^2 + 2)$$

$$25. \sum_{k=1}^{20} (4k^3)$$

$$26. \sum_{k=6}^{15} (k^2)$$