Write the first 5 terms of the defined sequence.

1. \( a_n = \frac{9n + 15}{n!} \)

2. \( a_n = 2(3)^{n-2} \)

3. \( a_n = 900 \left( \frac{1}{2} \right)^n \)

4. \( a_n = \frac{n - 1}{n^2 + 3} \)

Write an explicit Rule for each sequence.

5. -5, 1, 7, 13, 19, 25 ...

6. 22, 15, 8, 1, -6 ...

7. \( \frac{1}{64}, \frac{-1}{16}, \frac{1}{4}, -1, 4, \ldots \)

8. \( \frac{5}{1}, \frac{7}{1}, \frac{9}{2}, \frac{11}{6}, \frac{13}{24}, \ldots \)

9. An arithmetic sequence with 83\(^{rd}\) term 72.5 and 92\(^{nd}\) term 86.

10. A geometric sequence with 12\(^{th}\) term 6144 and 16\(^{th}\) term 98304

Evaluate each expression. Simplify completely.

11. \( \frac{18!}{3!16!} \)

12. \( \frac{102!16!}{100!18!} \)

Simplify each expression completely.

13. \( \frac{(n + 1)!}{(n - 1)!} \)

14. \( \frac{(n + 3)! (n - 2)!}{(n - 1)! (n + 1)!} \)