Explicit Formula – Day 2

Unit 7: Representations of Exponential Relations

Find the explicit formula.

1. $-4, -16, -64, -256, \ldots$

$r = \frac{-16}{-4} = 4$ $\quad a_n = a_1(r)^{n-1}$

$a_1 = -4$ $\quad a_n = -4(4)^{n-1}$

2. $3, 18, 108, 648, \ldots$

$r = \frac{18}{3} = 6$ $\quad a_n = a_1(r)^{n-1}$

$a_1 = 3$ $\quad a_n = 3(6)^{n-1}$

3. $1.5, 6, 24, 96, \ldots$

$r = \frac{6}{1.5} = 4$ $\quad a_n = a_1(r)^{n-1}$

$a_1 = 1.5$ $\quad a_n = 1.5(4)^{n-1}$

4. $-2, -1, -\frac{1}{2}, -\frac{1}{4}, \ldots$

$r = \frac{-1}{-2} = \frac{1}{2}$ $\quad a_n = a_1(r)^{n-1}$

$a_1 = -2$ $\quad a_n = -2\left(\frac{1}{2}\right)^{n-1}$

5. $-4, 16, -64, 256, \ldots$

$r = \frac{16}{-4} = -4$ $\quad a_n = a_1(r)^{n-1}$

$a_1 = -4$ $\quad a_n = -4(-4)^{n-1}$

6. $2, 12, 72, 432, \ldots$

$r = \frac{12}{2} = 6$ $\quad a_n = a_1(r)^{n-1}$

$a_1 = 2$ $\quad a_n = 2(6)^{n-1}$

7. $3, -6, 12, -24, \ldots$

$r = \frac{-6}{3} = -2$ $\quad a_n = a_1(r)^{n-1}$

$a_1 = 3$ $\quad a_n = 3(-2)^{n-1}$

8. $0.6, -3, 15, -75, \ldots$

$r = \frac{-3}{0.6} = -5$ $\quad a_n = a_1(r)^{n-1}$

$a_1 = 0.6$ $\quad a_n = 0.6(-5)^{n-1}$

9. $4, 8, 16, 32, \ldots$

$r = \frac{8}{4} = 2$ $\quad a_n = a_1(r)^{n-1}$

$a_1 = 4$ $\quad a_n = 4(2)^{n-1}$

10. $-3, -12, -48, -192, \ldots$

$r = \frac{-12}{-3} = 4$ $\quad a_n = a_1(r)^{n-1}$

$a_1 = -3$ $\quad a_n = -3(4)^{n-1}$

11. $-1, -4, -16, -64, \ldots$

$r = \frac{-4}{-1} = 4$ $\quad a_n = a_1(r)^{n-1}$

$a_1 = -1$ $\quad a_n = -1(4)^{n-1}$

12. $-2, -12, -72, -432, \ldots$

$r = \frac{-12}{-2} = 6$ $\quad a_n = a_1(r)^{n-1}$

$a_1 = -2$ $\quad a_n = -2(6)^{n-1}$

13. $3, 12, 48, 192, \ldots$

$r = \frac{12}{3} = 4$ $\quad a_n = a_1(r)^{n-1}$

$a_1 = 3$ $\quad a_n = 3(4)^{n-1}$

14. $-1, 4, -16, 64, \ldots$

$r = \frac{4}{-1} = -4$ $\quad a_n = a_1(r)^{n-1}$

$a_1 = -1$ $\quad a_n = -1(-4)^{n-1}$

15. $2, \frac{1}{2}, \frac{1}{8}, \frac{1}{32}, \ldots$

$r = \frac{\frac{1}{2}}{2} = \frac{1}{2} \cdot \frac{1}{2} = \frac{1}{4}$ $\quad a_n = a_1(r)^{n-1}$

$a_1 = 2$ $\quad a_n = 2\left(\frac{1}{4}\right)^{n-1}$

16. $-2, 4, -8, 16, \ldots$

$r = \frac{4}{-2} = -2$ $\quad a_n = a_1(r)^{n-1}$

$a_1 = -2$ $\quad a_n = -2(-2)^{n-1}$

17. $1, 4, 16, 64, \ldots$

$r = \frac{4}{1} = 4$ $\quad a_n = a_1(r)^{n-1}$

$a_1 = 1$ $\quad a_n = 1(4)^{n-1}$

18. $-3, -\frac{1}{2}, -\frac{1}{12}, -\frac{1}{72}, \ldots$

$r = \frac{-1/2}{-3} = -\frac{1}{2} \cdot -\frac{1}{3} = \frac{1}{6}$ $\quad a_n = a_1(r)^{n-1}$

$a_1 = -3$ $\quad a_n = -3\left(\frac{1}{6}\right)^{n-1}$

19. $-320, 80, -20, 5, \ldots$

$r = \frac{80}{-320} = -\frac{1}{4}$ $\quad a_n = a_1(r)^{n-1}$

$a_1 = -320$ $\quad a_n = -320\left(-\frac{1}{4}\right)^{n-1}$

20. $2, 4, 8, 16, \ldots$

$r = \frac{4}{2} = 2$ $\quad a_n = a_1(r)^{n-1}$

$a_1 = 2$ $\quad a_n = 2(2)^{n-1}$