

Explicit Formula

Unit 7: Representations of Exponential Relations

Find the explicit formula.

<p>1. 3, 15, 75, 375, ...</p> $r = \frac{15}{3} = 5 \quad a_n = a_1 (r)^{n-1}$ $a_1 = 3 \quad a_n = 3(5)^{n-1}$	<p>2. 3, -18, 108, -648, ...</p> $r = \frac{-18}{3} = -6 \quad a_n = a_1 (r)^{n-1}$ $a_1 = 3 \quad a_n = 3(-6)^{n-1}$
<p>3. -1, -5, -25, -125, ...</p> $r = \frac{-5}{-1} = 5 \quad a_n = a_1 (r)^{n-1}$ $a_1 = -1 \quad a_n = -1(5)^{n-1}$	<p>4. 3, 6, 12, 24, ...</p> $r = \frac{6}{3} = 2 \quad a_n = a_1 (r)^{n-1}$ $a_1 = 3 \quad a_n = 3(2)^{n-1}$
<p>5. -2, -4, -8, -16, ...</p> $r = \frac{-4}{-2} = 2 \quad a_n = a_1 (r)^{n-1}$ $a_1 = -2 \quad a_n = -2(2)^{n-1}$	<p>6. 4, 8, 16, 32, ...</p> $r = \frac{8}{4} = 2 \quad a_n = a_1 (r)^{n-1}$ $a_1 = 4 \quad a_n = 4(2)^{n-1}$
<p>7. -1, -6, -36, -216, ...</p> $r = \frac{-6}{-1} = 6 \quad a_n = a_1 (r)^{n-1}$ $a_1 = -1 \quad a_n = -1(6)^{n-1}$	<p>8. 4, -8, 16, -32, ...</p> $r = \frac{-8}{4} = -2 \quad a_n = a_1 (r)^{n-1}$ $a_1 = 4 \quad a_n = 4(-2)^{n-1}$
<p>9. $-\frac{2}{3}, \frac{1}{3}, -\frac{1}{6}, \frac{1}{12}, \dots$</p> $r = \frac{\frac{1}{3}}{-\frac{2}{3}} = \frac{1}{3} \cdot \frac{-3}{2} = -\frac{1}{2} \quad a_n = a_1 (r)^{n-1}$ $a_1 = -\frac{2}{3} \quad a_n = -\frac{2}{3} \left(-\frac{1}{2}\right)^{n-1}$	<p>10. 1.5, 3, 6, 12, ...</p> $r = \frac{3}{1.5} = 2 \quad a_n = a_1 (r)^{n-1}$ $a_1 = 1.5 \quad a_n = 1.5(2)^{n-1}$

11. -3, -6, -12, -24, ...

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

$$a_1 = -3$$

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

12. 1, -3, 9, -27, ...

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

$$a_1 = 1$$

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

13. $3, \frac{3}{2}, \frac{3}{4}, \frac{3}{8}, \dots$

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

$$a_1 = 3$$

$$a_n = 3\left(\frac{1}{2}\right)^{n-1}$$

14. 2, 10, 50, 250, ...

$$r = \frac{10}{2} = 5 \quad a_n = a_1 (r)^{n-1}$$

$$a_1 = 2$$

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

15. -2, -10, -50, -250, ...

$$r = \frac{-10}{-2} = 5 \quad a_n = a_1 (r)^{n-1}$$

$$a_1 = -2$$

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

16. 0.5, -2, 8, -32, ...

$$r = \frac{-2}{0.5} = -4 \quad a_n = a_1 (r)^{n-1}$$

$$a_1 = 0.5$$

$$a_n = 0.5(-4)^{n-1}$$

17. 1, 6, 36, 216, ...

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

$$a_1 = 1$$

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

18. -3, -9, -27, -81, ...

$$r = \frac{-9}{-3} = 3 \quad a_n = a_1 (r)^{n-1}$$

$$a_1 = -3$$

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

19. -4, -20, -100, -500, ...

$$r = \frac{-20}{-4} = 5 \quad a_n = a_1 (r)^{n-1}$$

$$a_1 = -4$$

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

20. 80, -40, 20, -10, ...

$$r = \frac{-40}{80} = -\frac{1}{2} \quad a_n = a_1 (r)^{n-1}$$

$$a_1 = 80$$

$$a_n = 80\left(-\frac{1}{2}\right)^{n-1}$$