

1. For $a=5, d=3$, find u_8 .

2. Find the coefficient of x^2 in $(1+2x)^5$.

3. Evaluate $4!$.

4. For $u_1=1$ and $u_{(n+1)}=u_n/2+3$, find u_2 .

5. Evaluate the sum of $(2k-1)$ from $k=3$ to 7.

6. A noninteger solution for an exact term count can always be rounded to the nearest integer.

☐ True ☐ False

7. Every geometric series with a negative ratio diverges.

☐ True ☐ False

8. Beginning- and end-of-period deposits always give the same final balance.

☐ True ☐ False

9. Every geometric series has a finite sum to infinity.

☐ True ☐ False

10. Every binomial expansion is a finite polynomial, including powers that are not positive integers.

☐ True ☐ False

1. **26.0**

$$u_8 = 5 + (8-1) \times 3 = 26.$$

2. **40.0**

Choose two of five factors and include 2^2 : $C(5,2) \times 4 = 40$.

3. **24.0**

$$4! = 4 \times 3 \times 2 \times 1 = 24.$$

4. **3.5**

$$u_2 = 1/2 + 3 = 7/2 = 3.5.$$

5. **45.0**

Add $5 + 7 + 9 + 11 + 13 = 45$.

6. **False**

The n th term and sum of n terms are different quantities. The n th term contains $n-1$ differences, not n . Do not round a noninteger solution for an exact number of terms. If the question asks for the first total at least a target, check the neighbouring integer totals. Not every arithmetic series has increasing partial sums.

7. **False**

Do not replace $r = -1/2$ by $r = 1/2$ in the finite formula: the parity of n matters. The infinite sum formula is not justified at $r = 1$ or $r = -1$ for nonzero a ; their terms do not tend to zero. A finite sum can exist even when its infinite continuation diverges.

8. **False**

Do not give the final end-of-period deposit an extra interest period. A balance includes both deposits and growth; it is not the interest alone. An exact target and an at-least target need different integer checks. A quoted annual rate cannot simply be used as a per-month factor without an appropriate conversion.

9. **False**

The first term has index 1, so the exponent is $n-1$. A sequence is a list; a series is a sum. A geometric sequence can alternate in sign and still converge.

10. **False**

An expansion in $2x$ requires $|2x| < 1$ for the infinite series, not merely $|x| < 1$. Positive-integer expansions are finite and do not have that convergence restriction.