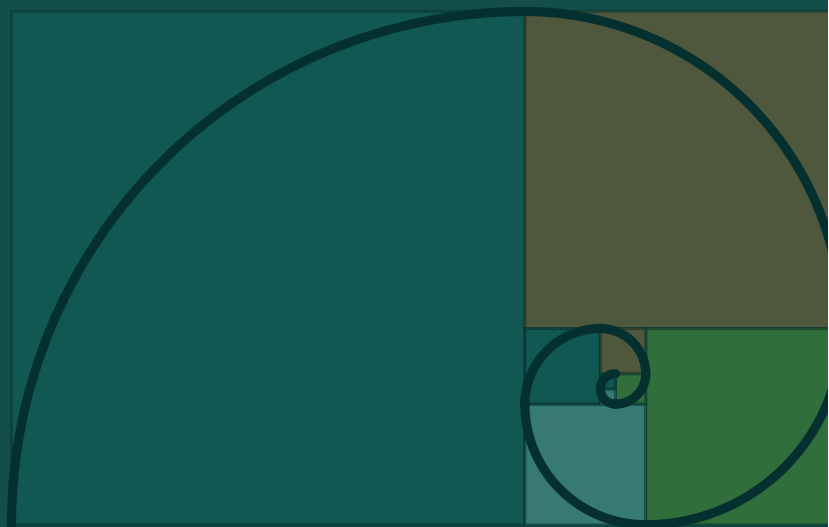


Sequences and series



Arithmetic n th term $u_n = a + (n - 1)d$

Arithmetic series $S_n = \frac{1}{2}n(a + l) = \frac{1}{2}n[2a + (n - 1)d]$

B

Geometric n th term $u_n = ar^{n-1}$

Geometric series $S_n = \frac{a(1-r^n)}{1-r}$, $S_\infty = \frac{a}{1-r}$ ($|r| < 1$)

B

Binomial, $n \in \mathbb{N}$ **B** $(a + b)^n = a^n + \binom{n}{1}a^{n-1}b + \binom{n}{2}a^{n-2}b^2 + \dots + b^n$

Binomial coefficient $\binom{n}{r} = {}^nC_r = \frac{n!}{r!(n-r)!}$

B

Binomial, $|x| < 1$, $n \in \mathbb{Q}$ **B** $(1 + x)^n = 1 + nx + \frac{n(n-1)}{1 \times 2}x^2 + \dots$

Sigma; recurrence $\sum_{r=1}^n r = \frac{1}{2}n(n + 1)$; $u_{n+1} = f(u_n)$

B given in the exam. Learn the rest.