Infinite Series - Class XI

Past Year JEE Questions

Questions

Quetion: 01

If x is positive, the first negative term in the expansion of $(1+x)^{27/5}$ is

A. 6th term

B. 7th term

C. 5th term

D. 8th term.

Solutions

Solution: 01

Explanation

General term of $(1+x)^n$ is $(T_{r+1}) = \frac{n(n-1).....(n-r+1)}{1.2.3....r}x^r$

$\therefore$ General term of $(1+x)^{27/5} = \frac{\frac{27}{5}(\frac{27}{5}-1).....(\frac{27}{5}-r+1)}{1.2.3....r}x^r$

For first negative term, $\left(\frac{27}{5}-r+1\right) < 0$

$\Rightarrow r > \frac{27}{5}+1$

$\Rightarrow r > \frac{32}{5}$

$\Rightarrow r > 6.4$

$\therefore$ r = 7

$T_{7+1} = T_8$ means 8th term is the first negative term.