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- 1) $\lim_{x \rightarrow 2} \frac{3^x + \frac{27}{3^x} - 12}{\frac{1}{x} - \frac{3}{3^x}}$ is equal to.
- 2) If variance of first n natural numbers is 10 and variance of first m even natural numbers is 16, $m + n$ is equal to
- 3) If the sum of the coefficients of all even powers of x in the product $(1 + x + x^2 + x^3 + \dots + x^{2n})(1 - x + x^2 - x^3 + \dots + x^{2n})$ is 61, then n is equal to
- 4) Let S be the set of points where the function, $f(x) = |2 - |x - 3||$, $x \in \mathbb{R}$, is not differentiable. Then, the value of $\sum_{x \in S} f(f(x))$ is equal to

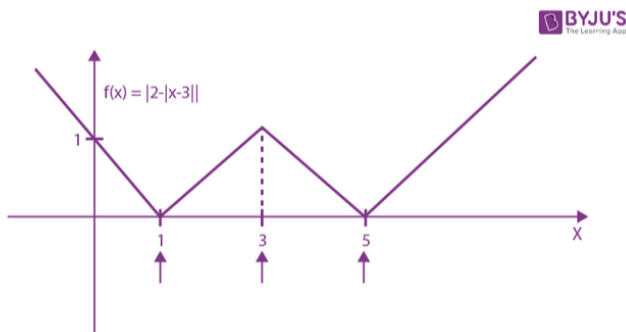


Fig. 4.

- 5) Let $A(1, 0)$, $B(6, 2)$, $C(\frac{3}{2}, 6)$ be the vertices of a triangle ABC . If P is a point inside the triangle ABC such that the triangle APC , APB and BPC have equal areas, then the length of the line segment PQ , where Q is the point $(\frac{-7}{6}, \frac{-1}{3})$, is