

0

$$\lim_{x \rightarrow 0} \left(\frac{1^x + 2^x + \dots + n^x}{n} \right)^{\frac{1}{x}}$$

$$\Rightarrow \lim_{x \rightarrow 0} \left(1 + \frac{1^x + 2^x + \dots + n^x - n}{n} \right)^{\frac{1}{x}} \quad (1^\infty) \text{ form}$$

$$\Rightarrow \lim_{x \rightarrow 0} \left(\frac{1^x + 2^x + \dots + n^x - n}{n} \right)^{\frac{1}{x}}$$

$$\Rightarrow \lim_{x \rightarrow 0} e^{\frac{0 + 2^x \log 2 + 3^x \log 3 + \dots + n^x \log n - 0}{n}}$$

$$\Rightarrow e^{\frac{\log 2 + \log 3 + \dots + \log n}{n}} = e^{\frac{\log 2 \cdot 3 \cdot \dots \cdot n}{n}}$$

$$= e^{\frac{\log n!}{n}} = \boxed{(n!)^{\frac{1}{n}}} \quad \text{A}$$