

$$\boxed{4} \quad \lim_{x \rightarrow \infty} \frac{(x-1)(x-2)(x-3)(x-4)(x-5)}{(2x-1)^5} = (1)$$

$$\begin{aligned} (x-1)(x-2)(x-3)(x-4)(x-5) &= \{x \neq 0\} = \\ &= x\left(1-\frac{1}{x}\right)x\left(1-\frac{2}{x}\right)x\left(1-\frac{3}{x}\right)x\left(1-\frac{4}{x}\right)x\left(1-\frac{5}{x}\right) = \\ &= x^5\left(1-\frac{1}{x}\right)\left(1-\frac{2}{x}\right)\left(1-\frac{3}{x}\right)\left(1-\frac{4}{x}\right)\left(1-\frac{5}{x}\right) \end{aligned}$$

$$(2x-1)^5 = \{x \neq 0\} \cdot x^5\left(2-\frac{1}{x}\right)$$

$$\frac{(x-1)(x-2)(x-3)(x-4)(x-5)}{(2x-1)^5} = \{x \neq 0\}$$

$$= \frac{x^5\left(1-\frac{1}{x}\right)\left(1-\frac{2}{x}\right)\left(1-\frac{3}{x}\right)\left(1-\frac{4}{x}\right)\left(1-\frac{5}{x}\right)}{x^5\left(2-\frac{1}{x}\right)^5} =$$

$$= \frac{\left(1-\frac{1}{x}\right)\left(1-\frac{2}{x}\right)\left(1-\frac{3}{x}\right)\left(1-\frac{4}{x}\right)\left(1-\frac{5}{x}\right)}{\left(2-\frac{1}{x}\right)^5}$$

$$(1) = \lim_{x \rightarrow \infty} \frac{\left(1-\frac{1}{x}\right)\left(1-\frac{2}{x}\right)\left(1-\frac{3}{x}\right)\left(1-\frac{4}{x}\right)\left(1-\frac{5}{x}\right)}{\left(2-\frac{1}{x}\right)^5} =$$

$$= \frac{\left(1-\lim_{x \rightarrow \infty} \frac{1}{x}\right)\left(1-2\lim_{x \rightarrow \infty} \frac{1}{x}\right)\left(1-3\lim_{x \rightarrow \infty} \frac{1}{x}\right)\left(1-4\lim_{x \rightarrow \infty} \frac{1}{x}\right)\left(1-5\lim_{x \rightarrow \infty} \frac{1}{x}\right)}{\left(2-\lim_{x \rightarrow \infty} \frac{1}{x}\right)^5}$$

$$= \frac{(1-0)(1-0)(1-0)(1-0)(1-0)}{(2-0)^5} = \frac{1 \cdot 1 \cdot 1 \cdot 1 \cdot 1}{2^5} = \frac{1}{2^5} = \frac{1}{32}$$

$$\boxed{\lim_{x \rightarrow \infty} \frac{(x-1)(x-2)(x-3)(x-4)(x-5)}{(2x-1)^5} = \frac{1}{32}}$$