☷

$$\lim_{x \to 1} \frac{x^3 - 3x + 2}{x^4 - 4x + 3} = (1)$$

$$(x^3 - 3x + 2)_{x=1} = 1^3 - 3 \cdot 1 + 2 = 1 - 3 + 2 = 3 - 3 = 0$$

$$(x^4 - 4x + 3)_{x=1} = 1^4 - 4 \cdot 1 + 3 = 1 - 4 + 3 = 4 - 4 = 0$$

$$\lim_{x \to 1} x^3 - 3x + 2 = (x^3 - 3x + 2)_{x=1} = 0$$

$$\lim_{x \to 1} x^4 - 4x + 3 = (x^4 - 4x + 3)_{x=1} = 0$$

$$(1) = \left(\frac{0}{0}\right)$$

$$x^3 - 3x + 2 = x^3 - x - 2x + 2 = x^2(x-1) - 2(x-1) = (x^2 - 2)(x-1) = (x-1)(x^2-2)$$

$$x^4 - 4x + 3 = x^4 - x - 3x + 3 = x^3(x-1) - 3(x-1) = (x^3-3)(x-1) = (x-1)(x^3-3)$$

$$\frac{x^3 - 3x + 2}{x^4 - 4x + 3} = \frac{(x-1)(x^2-2)}{(x-1)(x^3-3)} = \left\{ x - 1 \neq 0 \; ; \; x \neq 1 \right\} = \frac{x^2 - 2}{x^3 - 3}$$

$$(1) = \lim_{x \to 1} \frac{x^2 - 2}{x^3 - 3} = \left(\frac{x^2 - 2}{x^3 - 3}\right)_{x=1} =$$

$$= \frac{1^2 - 2}{1^3 - 3} = \frac{1 - 2}{1 - 3} = \frac{(-1)}{(-2)} = \frac{1}{2}$$

$$\boxed{\lim_{x \to 1} \frac{x^3 - 3x + 2}{x^4 - 4x + 3} = \frac{1}{2}}$$