1.2

$$\lim_{x\to 7} \frac{x^2-49}{x^2-13x+42} = (1)$$

$$\lim_{x\to 7} x^2-49 = (x^2-49)_{x=7} = 7^2-49 = 49-49 = 0$$

$$\lim_{x\to 7} x^2-13x+42 = (x^2-13x+42)_{x=7} =$$

$$= 7^2-13\cdot 7+42 = 49-91+42 = 91-91 = 0$$

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

$$x^2-49 = x^2-7^2 = (x-7)(x+7)$$

$$x^2-13x+42 = x^2-7x-6x+42 = x(x-7)-6(x-7) =$$

$$= (x-6)(x-7)$$

$$\frac{x^2-49}{x^2-13x+42} = \frac{(x-7)(x+7)}{(x-6)(x-7)} = \{x-7\neq 0;\ x\neq 7\} = \frac{x+7}{x-6}$$

$$(1) = \lim_{x\to 7} \frac{x+7}{x-6} \doteq \left(\frac{x+7}{x-6}\right)_{x=7} = \frac{7+7}{7-6} = \frac{14}{1} = 14$$

$$\lim_{x\to 7} \frac{x^2-49}{x^2-13x+42} = 14$$