1.1 Найти предел функции:

$$\lim_{x\to 6} \frac{x^2-36}{x^2-x-30} = (1)$$

$$\lim_{x\to 6} x^2-36 = (x^2-36)_{x=6} = 6^2-36 = 36-36 = 0$$

$$\lim_{x\to 6} x^2-x-30 = (x^2-x-30)_{x=6} = 6^2-6-30 = 36-6-30 = 36-36 = 0$$

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

$$x^2-36 = x^2-6^2 = (x-6)(x+6)$$

$$x^2-x-30 = x^2-6x+5x-30 = x(x-6)+5(x-6) = (x+5)(x-6)$$

$$\frac{x^2-36}{x^2-x-30} = \frac{(x-6)(x+6)}{(x+5)(x-6)} = \left\{x-6\neq 0;\ x\neq 6\right\} = \frac{x+6}{x+5}$$

$$(1) = \lim_{x\to 6} \frac{x+6}{x+5} = \left(\frac{x+6}{x+5}\right)_{x=6} =$$

$$= \frac{6+6}{6+5} = \frac{12}{11}$$

Ответ:

$$\lim_{x\to 6} \frac{x^2-36}{x^2-x-30} = \frac{12}{11}$$