limits

factor

$$\lim_{x\to -5}\frac{x^2-25}{x^2+2x-15} = \lim_{x\to -5}\frac{(x+5)(x-5)}{(x+5)(x-3)}$$

$$= \lim_{x\to -5}\frac{x-5}{x-3} = \frac{(-5)-5}{(-5)-3} = \frac{-10}{-8} = \frac{5}{4} = 1.25$$

$$\lim_{x\to 0}\frac{(6+x)^2-36}{x} = \lim_{x\to 0}\frac{36+12x+x^2-36}{x}$$

$$= \lim_{x\to 0}\frac{x^2+12x}{x} = \lim_{x\to 0}\frac{x(x+12)}{x} = (0)+12 = 12$$

table of values

$$\lim_{x\to -5}\frac{x^2-25}{x^2+2x-15} \Rightarrow \lim_{x\to -5^+}$$

x	-4	-4.9	-4.99	-4.999
y	1.29	1.25	1.25	1.25

$$\lim_{x\to -5^-}$$

x	-6	-5.1	-5.01	-5.001
y	1.2	1.24	1.25	1.25

$= 1.25$

$$\lim_{x\to 0}\frac{(6+x)^2-36}{x} \Rightarrow \lim_{x\to 0^+}$$

x	10	1	0.1	0.01
y	22	13	12.1	12.01

$$\lim_{x\to 0^-}$$

x	-10	-1	-0.1	-0.01
y	2	11	11.9	11.99

$= 12$