1) Prove que :

$$a)\ \lim_{(x,y)\to(2,1)}\left(\frac{3x-4y}{3xy}\right)=\frac{1}{3}$$

$$b)\ \lim_{\substack{x\to 2\\ y\to 2\\ z\to -1}}\left(5x^3yz+7xyz^3+\frac{2xy^2+x^2yz}{x-yz}\right)=-106$$

$$c)\ \lim_{(x,y)\to(0,0)}\left(\frac{x^3-y^3}{x-y}\right)=0$$

2) Resolva

$$a)\lim_{\substack{x\to 0\\ y\to 1}}\left(\frac{x-xy+3}{x^2+5xy-y^3}\right) \qquad b)\lim_{\substack{x\to 3\\ y\to -4}}\sqrt{x^2+y^2}$$

$$c)\lim_{\substack{x\to 0\\ y\to 0}}\left(\frac{x^2-xy}{\sqrt{x}-\sqrt{y}}\right) \qquad d)\lim_{\substack{x\to 0\\ y\to 0}}\left(\frac{x^2-y^2}{1+x^2+y^2}\right)$$

$$e)\lim_{\substack{x\to 0\\ y\to 0}}\left(\frac{3+x^2-xy}{\sqrt{x}+\sqrt{y}}\right) \qquad f)\lim_{\substack{x\to 2\\ y\to 1}}\left(\frac{2x^2-3xy}{4+x^2+y^2}\right)$$

$$g)\lim_{\substack{x\to 0\\ y\to 0}}\left(\frac{10}{\sqrt{25-x^2-y^2}}\right) \qquad h)\lim_{\substack{x\to 0\\ y\to 0}}\left(e^{sen(4x+2y)}+\cos(3xy)\right)$$

Resposta:

a) -3	b) 5	c) 0	d) 0
e) não existe	f) 2/9	g) 2	h) 2

3- Prove que o limite não existe:

a) $\lim_{\substack{x\to 0\\ y\to 0}}\left(\frac{x^2+sen^2x}{2x^2+y^2}\right)$ b) $\lim_{\substack{x\to 0\\ y\to 0}}\left(\frac{y^4}{x^4+3y^4}\right)$