Cálculo 2

a) $f(x,y) = x^4y^3 + 8x^2y$

$\frac{\partial}{\partial x} f(x,y) = 4x^3y^3 + 16xy$

$\frac{\partial}{\partial y} f(x,y) = 3y^2x^4 + 8x^2$

b) $f(x,t) = \sqrt{x}\ln(t)$

$\frac{\partial}{\partial x} f(x,t) = \frac{1}{2\sqrt{x}}\ln(t) + \sqrt{x}\cdot 0$

$= \frac{\ln(t)}{2\sqrt{x}}$

$\frac{\partial}{\partial t} f(x,t) = 0\cdot\ln(t) + \sqrt{x}\cdot\frac{1}{t}$

$= \frac{\sqrt{x}}{t}$

c) $f(x,y) = \frac{x}{(x+y)^2}$ $\quad (x+y)^2 = x^2+2xy+y^2$

$\frac{\partial}{\partial x} f(x,y) = \frac{(x^2+2xy+y^2)-((2x+2y+0)\cdot x)}{(x^2+2xy+y^2)^2}$

$= \frac{x^2+2xy+y^2-2x^2-2xy}{(x^2+2xy+y^2)^2} = \frac{-x^2+y^2}{(x^2+2xy+y^2)^2}$

$\frac{\partial}{\partial y} f(x,y) = x\frac{\partial}{\partial y}\left(\frac{1}{(x+y)^2}\right) = x\frac{\partial}{\partial y}\left((x+y)^{-2}\right)$

$= x\cdot\frac{-2}{(x+y)^3}\frac{\partial}{\partial y}(x+y) = x\left(\frac{-2}{(x+y)^3}\cdot 1\right) = \frac{-2x}{(x+y)^3}$