Recap:

Q)

y\x	1	3	6
0	1	-1	-3
2	2	1	0
5	4	2	0

Estimate $f_x(3,2)$ and $f_y(3,2)$.

A:

Q) Let $S = f(p,a)$ be sales of a product.
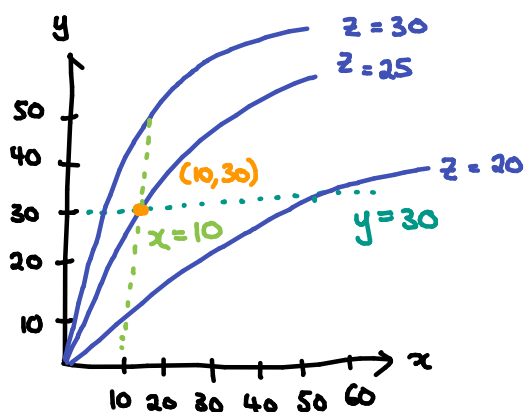
   p = price ($/unit)

   a = money spent on ads (thousands of $)

a) Is f_p positive or negative?

b) What does $f_a(8,12) = 150$ mean?

A:

Q) Contour diagrams: Estimate $f_x(10,30)$ and $f_y(10,30)$.

Start at $(10,30)$ and move along $y = 30$ until you hit the next contour.

Similarly, move along $x = 10$ until you hit the next contour.

Note: you can move in the negative x/y-direction but make sure you get the signs right in $\Delta x / \Delta y$.

If we use $(10,10)$ instead, $f_y(10,30) \approx \dfrac{20-25}{10-30} = \dfrac{-5}{-20} = \dfrac{1}{4}$.

Example: Give a possible contour diagram of $f(x,y)$:

a) $f_x > 0$, $f_y > 0$

b) $f_x > 0$, $f_y < 0$

c) $f_x < 0$, $f_y > 0$

d) $f_x < 0$, $f_y < 0$

A://

§14.2: Calculating Partial Derivatives

Example: Let $f(x,y) = e^{x \ln(y)}$.

a) Use difference quotients with $h = 0.01$ to estimate $f_x(2,2)$ and $f_y(2,2)$.

A:

b) Compute $f_x(2,2)$ and $f_y(2,2)$ exactly.

A: