

Math 223 - Section 010  
Some Answers to Homework Problems for Section 14.1

#2. For  $\Delta x = \Delta y = .01$ ,  $f_x(1, 2) \approx -.0493$ ,  $f_y(1, 2) \approx -.3660$ .  
For  $\Delta x = \Delta y = .001$ ,  $f_x(1, 2) \approx -.0501$ ,  $f_y(1, 2) \approx -.3629$ .

#13  $\frac{\partial n}{\partial x}|_B \approx 0$ ,  $\frac{\partial n}{\partial y}|_B \approx -.05$ ,  
 $\frac{\partial n}{\partial x}|_C \approx 0$ ,  $\frac{\partial n}{\partial y}|_C \approx 0$ .

#16  $f_t(18, 6) \approx -1.5$  percent/month.  
 $f_t(18, 6) \approx -1.22$  percent/month.

#18 a)  $f_x(0, 5) < 0$   
b)  $f_y(0, 5) > 0$ .

#19 a)  $f_y(P) < 0$   
b)  $f_y(Q) < 0$   
c)  $f_x(Q) < 0$ .