

Math 212 Spring 2020  
Multivariable Calculus Written HW 3  
Due Wednesday, February 12

1. Use the definition of partial derivative to compute  $\frac{\partial}{\partial x}x^2y$ .
2. Suppose you borrow  $\$A$  at an interest rate of  $r\%$  per month and pay it off over  $t$  months, and the monthly payment is given by some function  $P(A, r, t)$ . For each of the following statements, tell me the units and explain what it tells you about your loan.
  - (a)  $g(8000, 1, 24) = 376.59$
  - (b)  $\frac{dg}{dA}(8000, 1, 24) = .047$
  - (c)  $\frac{dg}{dr}(8000, 1, 24) = 44.83$ .
3. Use difference quotients with  $\Delta x$  and  $\Delta y$  equal to 1 to estimate  $f_x(3, 2)$  and  $f_y(3, 2)$ , where  $f(x, y) = \frac{x^2}{y+1}$ . Then use  $\Delta x = \Delta y = .1$ .