

Name \_\_\_\_\_ I.D.# \_\_\_\_\_ Serial# \_\_\_\_\_

Q1  $\lim_{x,y \rightarrow 0,0} \frac{xy^2}{x^2 - y^4}$

Q2 Let  $z = e^{x-y} f(x, y)$ , where  $f$  is a differentiable function. Find  $\frac{z}{x}$  and  $\frac{z}{y}$ .

Q3 Let  $f(x, y) = x^2 \sqrt{y^3}$ , use total differential to approximate the value of the function  $f$  at  $P(2.05, 3.97)$ , where  $(x, y) = (2, 4)$ .