

Multiple Variable Differentiation Review Name _____

Find all the first partial derivatives of each of the functions below. Simplify each expression as much as possible.

1. $f(x, y) = e^x \cos(y)$

2. $g(x, y) = \frac{xy}{x+y}$

3. $z(x, y) = \ln(x^2 + y^2 + 1)$

4. $m(x, y, z) = z \arctan\left(\frac{y}{x}\right)$

5. $u(x, t) = ce^{-n^2t} \sin(nx)$

6. $v(x, t) = c \sinh(kx) \cos(kt)$

7. $q(r, s, t) = r^2 e^{-st} \sin(rs)$

8. $r(u, v) = u^3 - 3uv + v^2$

9. $p(x, y) = \arctan\left(\frac{y}{x}\right) - \ln\sqrt{x^2 + y^2}$

10. $w(x, y) = \arccos(xy)$

11. $F(x, y) = \int_x^y t^2 - 1 dt$