1 Partial derivative practice problems

1. Find the first partial derivatives of the function:

   (a) $f(x, y) = y^5 - 3xy$

   (b) $f(x, y) = x^4y^3 + 8x^2y$

   (c) $f(x, y) = \sin x \cos y$

   (d) $f(x, y) = x^y$

2. Find all second partial derivatives of the function:

   (a) $f(x, y) = x^3y^5 + 2x^4y$

   (b) $f(x, y) = \dfrac{xy}{x - y}$