1. Compute \( \frac{\partial}{\partial x} \left( \frac{xy}{2x+y} \right) \)

2. Given \( f(x, y) = xy + \cos(xy) \), determine \( f_x(x, y) \) and \( f_{xy}(x, y) \).

3. Given \( f(x, y) = 2x^3 - 6xy + 3y^2 \), determine the critical points of \( f(x, y) \).
4. Given that \( f(x, y) = x^4 - 4xy + y^4 \), we compute that \( f_x(x, y) = 4x^3 - 4y \) and \( f_y = 4y^3 - 4x \). Verify that \((0, 0)\), \((1, 1)\) and \((-1, -1)\) are critical points and classify them (if possible) as either local minima, local maxima or saddle points.
1. Compute $\frac{\partial}{\partial x} \left( \frac{xy}{x+2y} \right)$

2. Given $f(x, y) = xy + \sin(xy)$, determine $f_x(x, y)$ and $f_{xy}(x, y)$.

3. Given $f(x, y) = 4x^3 - 12xy + 6y^2$, determine the critical points of $f(x, y)$. 
4. Given that \( f(x, y) = x^4 - 4xy + y^4 \), we compute that \( f_x(x, y) = 4x^3 - 4y \) and \( f_y = 4y^3 - 4x \). Verify that \((0,0)\), \((1,1)\) and \((-1,-1)\) are critical points and classify them (if possible) as either local minima, local maxima or saddle points.