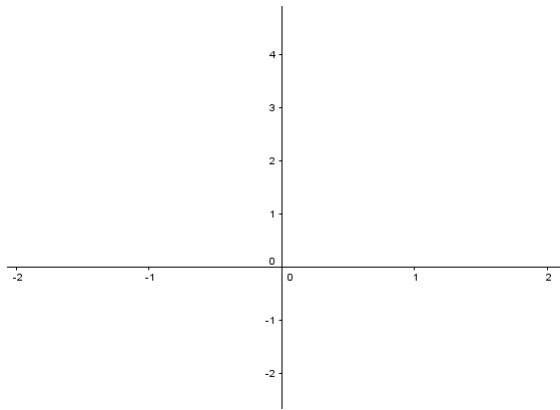


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1. Find and sketch the domain of the following function: $f(x, y) = \frac{\sqrt{y - x^2}}{1 - x}$



2. Find $\lim_{(x,y) \rightarrow (0,0)} \frac{xy^4}{x^2 + y^8}$ along the following paths. Then determine if the limit exists.

(a) $y = 0$

(b) $x = 0$

(c) $x = y^4$

3. Find the partial derivatives f_x and f_y of $f(x, y) = 2^x y^3 + y \ln(xy)$