

1. [12 points] For each part below, give an explicit formula for a function which satisfies the given properties, if one exists. If such a function does not exist, explain why. Be sure to clearly indicate your final answer for each part.
- a. [3 points] A continuous function, f , which is not differentiable.
- b. [3 points] A cubic polynomial, p , with two x -intercepts.
- c. [3 points] A continuous function, c , satisfying $\lim_{x \rightarrow 0^+} c(x) = -1$ and $\lim_{x \rightarrow 0^-} c(x) = 1$.
- d. [3 points] A rational function, r , with a vertical asymptote at $x = 1$ and a horizontal asymptote at $y = 1$.