Problem statement Suppose \( f(x) = (1 - x)^{-1/2} = \frac{1}{\sqrt{1-x}}. \)

a) Find the fourth Taylor polynomial, \( T_4(x) \), centered at \( a = 0 \) for \( f \).

b) Sketch the graphs of \( y = f(x) \) and \( y = T_4(x) \) in the window \([-1, 1] \times [0, 3]\).

c) Sketch the graph of \( f(x) - T_4(x) \) in the window \([-0.5, 0.5] \times [-0.01, 0.01]\).

d) Use Taylor’s inequality (the Error Bound) to find an overestimate for \( |f(x) - T_4(x)| \) on the interval \([-0.5, 0.5]\). Your answer should be an explicit number valid for every \( x \) on this interval.