

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 $[-.5, .5] \times [-.01, .01]$.

d) Use Taylor's inequality (the **Error Bound**) to find an overestimate for $|f(x) - T_4(x)|$ on the interval $[-.5, .5]$. Your answer should be an explicit number valid for every x on this interval.