

Problem statement Fred *loves* polynomials with rational coefficients and only such polynomials. Suppose $f(x) = \sqrt{x}$. Find a polynomial $P(x)$ that Fred will adore so that, for any x is in the interval $[3, 5]$, the difference between $P(x)$ and $f(x)$ is less than .01.

Hint The interval is $[3, 5]$. What number is the *center* of that interval? And what is the function? To the right is a graph of \sqrt{x} and a polynomial on $[3, 5]$ (yes, two functions, even if you don't believe it). There are many polynomials which answer this question correctly. Please find one and explain why it is such a polynomial.

