

Let $f(x) = \frac{1}{x-2}$ and $g(x) = 14 \sin(3x) + 2x^2 - 4x^3 + 1$

1. Does $f(x)$ satisfy the *hypotheses* of the IVT on the interval $[0, 3]$?
2. Does $g(x)$ satisfy the *hypotheses* of the IVT on the interval $[0, 3]$?
3. Use the IVT to show that $g(x)$ has a root between $x = 0$ and $x = 3$.
4. Use the IVT to show that $g(x)$ has a stationary point between $x = -1$ and $x = 0$.