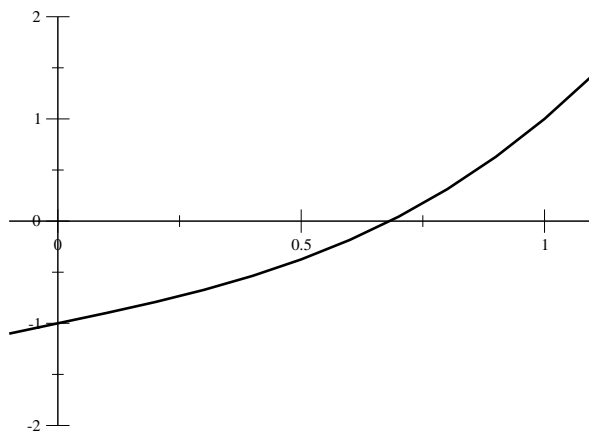


Intermediate value theorem example #2

Show that $x^3 + x - 1 = 0$ has a root between $x = 0$ and $x = 1$.

Let $f(x) = x^3 + x - 1$, then $f(0) = -1$, $f(1) = 1 + 1 - 1 = 1$. By the IVT, $f(x) = 0$ for some x between 0 and 1, and thus $f(x)$ has a root between 0 and 1.

But the IVT doesn't tell us where, or how many roots. To determine that, we graph the function:



The graph tells us there is only one root between $x = 0$ and $x = 1$.