

$$F(x) = x^3 + x + 4$$

$$\lim_{x \rightarrow \infty} f(x) = \boxed{\infty}$$

$$\lim_{x \rightarrow -\infty} f(x) = \boxed{-\infty}$$

$\Rightarrow$ $f(x)$ has at least one zero

$\rightarrow$ ~~Now~~ Now to show it has exactly one zero

$$f'(x) = 3x^2 + 1$$

$\underbrace{\qquad}_{\geq 0}$

$$\boxed{f'(x) > 0} \quad \forall x \in \mathbb{R}$$

$\Rightarrow$ $f(x)$ is strictly increasing.

Thus, $f(x)$ has exactly only one root.