- 1. Let $f : \mathbf{R} \to \mathbf{R}$ be the function given by $f(x) = 3x^2 + 2x + 4$. Show that f is continous at a. 3 b. 6
 - c. a for any $a \in \mathbf{R}$

2. Let $f:[0,\infty)\to \mathbf{R}$ be given by $f(x)=\sqrt{x}$. Prove that f is continuous at 4.

3. Let $f : \mathbf{R} - \{0\} \to \mathbf{R}$ be given by $f(x) = \frac{1}{x}$. Prove that f is continuous at 1.

- 4. Let $g : \mathbf{R} \to \mathbf{R}$ be given by $g(x) = x^3$.
 - a. Prove that g is continous at 2.
 - b. Prove that g is continous at a for any $a \in \mathbf{R}$.
 - c. Prove that for any $r \in \mathbf{R}$, there is a number $z \in \mathbf{R}$ such that $z^3 = r$.