1. Find the following limits. Show your work.
   (a) $\lim_{x \to 1} \sqrt{x^2 - x + 1}$
   (b) $\lim_{x \to 0^+} \frac{|x|}{x}$
   (c) $\lim_{x \to 0} \frac{\sin(x^2)}{x}$
2. Are the following functions continuous? Justify your response.
   (a) $x^4 + 2x^2 + 5$ over $\mathbb{R}$
   (b) $\frac{1}{1+x}$ on the interval $[0, 2]$
   (c) $\frac{1}{1+x}$ on the interval $(1, 2]$
   (d) $\frac{|2x+3|}{2x+3}$ over $\mathbb{R}$
3. Find the derivative of $f(x) = 6x^2 + x - 10$ using the formal definition of the derivative.
4. Find the derivative of the functions. Show your work.
   (a) $f(x) = \frac{1}{x^{2/3}}$
   (b) $f(x) = e^{x^2+1} + x \log(x + 3)$
   (c) $f(x) = \frac{x+1}{x^2+2x+5}$
5. Find the maximum and minimum points of $f(x)$ on the interval $[-2, -1/4]$.

$$f(x) = \frac{(x-1)^3}{x}$$

(Hint: The roots of the polynomial $2x^3 - 3x^2 + 1$ are 1 and $-1/2$.)