Calculus I - MAC 2311 - Section 001

In-class review session Exam

04/25/2018

Ex 1. Compute the following limits:

a) $\lim_{x \to -\infty} x^3 - x^2 - 6x$

I METHOD

II METHOD

b) $\lim_{x \to \infty} \frac{\ln(1+x^2)}{x^2}$

c) $\lim_{x \to \infty} \frac{-3x^3 + 8x - 1}{2x^3 - x^2 + 4}$

d) $\lim_{x \to 1} \frac{x-2}{x-1}$

e) $\lim_{x \to 0} \frac{\sin(\pi e^x)}{x}$

Ex 2. Let $f(x) = \dfrac{x^3}{2} - 2x^2 + 2x$.

(a) List the following, showing all work:

- the x and y- intercepts, if any
- the horizontal and vertical asymptotes, if any
- the intervals of increase and decrease of f
- all local maximum and local minimum values of f
- the intervals over which f is concave up and the intervals over which f is concave down
- all inflection points

(b) Sketch the graph of f and label all the items that you listed in (a).