1) Find the critical points of $f(x) = x^{8/5} + x^{3/5}$

2) Find the value(s) of the absolute extrema of the function $f(x) = 2x^3 - 3x^2 - 12x + 1$ on the interval [-2, 3] . State theorem and conditions

3) If $f(x) = \frac{x^2 - 2x - 3}{x+2}$ on [-1,3], determine if Rolle's Theorem can be applied. If yes, find the value(s) of c defined on Rolle's Theorem. State conditions and show steps.

4) If $g(x) = x^3 - x - 1$ on [-1, 2], determine if the Mean Value Theorem can be applied. If yes, find the value(s) of c defined in the Mean Value Theorem. State conditions and show steps.

5) If $f(x) = 2x^3 + 3x^2 - 12x$ find the following (where appropriate): Intervals where f(x) is increasing, decreasing, relative maximum points, and relative minimums points. Justify your answer(s)

6) If $f(x) = x^5 - 5x^4 + 3x + 7$ Find the intervals where f(x) is concave up and concave down, and find all points of inflection. (Justify your answers)

7) Sketch a labeled graph of a function, f, with the following characteristics:
f(-4) = 5, f(-1) = -2, f(0) = 0, f(2) = 4
f '(x) < 0 for x < -1 and x > 2
f '(-1) = 0 , f '(2) = 0
f '(x) > 0 for -1 < x < 2
f ''(x) < 0 for x < −4 , x > 0
f ''(x) > 0 for - 4 < x < 0