Name: _____

Curve Sketching

1) For the given functions

    1. Find open intervals on which the function is increasing or decreasing

    2. Locate all local extrema

    3. Find open intervals on which the function is concave upward or downward

    4. Find the points of inflection

    5. Graph the function.

1) $f(x) = (x+2)^2 (x-4)$

2) $f(x) = x + \cos x, \quad [0, \ 2\pi]$

3) $f(x) = x^3 - 3x^2 - 9x + 12$

4) $f(x) = \dfrac{x+1}{x-3}$

2) Sketch the graphs

    1) $y = f(x) = \dfrac{x-1}{x^2-4}$

    2) $y = g(x) = \dfrac{x+3}{1+x^2}$

    3) $y = p(x) = x - \dfrac{3x}{1-x^3}$

    4) $y = g(x) = x^2 e^x$

    5) $y = p(x) = x - \dfrac{4}{x}$

3) Study the variation and construct the graph of each of the following functions:

1) $y = -x^4 + 8x^2 - 7$

2) $y = x^4 + 4$

3) $y = -x^3 + 8x^2 + 5x - 2$

4) $y = x^4 + x^3 + 1$

5) $y = \dfrac{x^2 - 3x}{(x-1)^2}$

6) $y = \dfrac{x^2 - 2}{4x + 5}$

7) $y = \dfrac{x^2 + x - 1}{x^2 - 2x}$

8) $y = \dfrac{x^2 - 1}{x^2 + 1}$

9) $y = \dfrac{x}{x^2 - 1}$