4.4 Graphing Functions

MATH 205

Lets Sketch $f(x) = x^3 + 4x^2 - 12x$

1. Determine the domain and any symmetries.
2. Determine f'. Use it to find:
   a) The critical points of $f(x)$ and identify the function's behavior at each one.
   b) Intervals on which $f(x)$ is increasing or decreasing
3. Determine f''. Use it to find:
   a) Points of inflection
   b) Intervals on which $f(x)$ is concave up or concave down.
4. Identify Asymptotes and End Behavior.
5. Plot key points(Intercepts, Critical points, inflection points) and sketch the curve.

More Sketching

1. $f(x) = x^3 - 3x^2 - 7x - 10$

2. $g(x) = x^{\frac{2}{3}}(x^2 - 9)$

3. $f'(x) = \dfrac{x+2}{x^2(x-4)}$

Note: $f(x)$ is not continuous at $x = 0$ and $x = 4$

And More

4. $h(x) = \dfrac{10x}{x^2 + 4}$

5. $k(x) = 2x^2 \ln x - 5x^2$