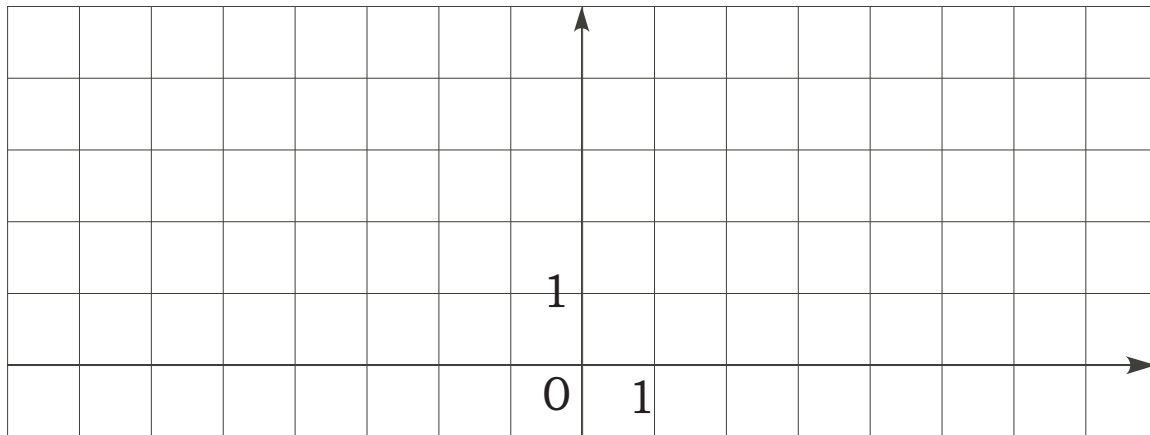# Math 10350 Written Assignment 06
Curve Sketching Packet 01

1. Sketch the graph of a **continuous** functions having the properties below. Mark in the graph the **coordinates** critical points and inflection points.

- $f'(x) < 0$ on $(-\infty, 0)$ or $(2, \infty)$.

- $f'(x) > 0$ on $(0, 2)$.

- $f''(x) < 0$ on $(-\infty, -2)$ or $(2, 4)$.

- $f''(x) > 0$ on $(-2, 2)$ or $(4, \infty)$.

- $f'(0) = 0$ but $f'(2)$ does not exist.

- $\lim\limits_{x \to +\infty} f(x) = 2 = \lim\limits_{x \to -\infty} f(x)$.

- $f(0) = 0$ and $f(2) = 4$.

2. Sketch the graph of $g(x) = xe^{-x}$ by completing the steps below.

2a. Find all x-intercepts and y-intercept of the graph of $f(x)$ whenever possible.

2b. Find coordinates of all critical points, vertical asymptotes, and places where $f(x)$ are undefined.

2c. Determine where $f(x)$ is increasing and where it is decreasing. Give your answer using interval notation.

2d. Determine the concavity and coordinates of inflection points of $f(x)$.

2e. Find all asymptotes and limit at infinity whenever applicable. Check for any symmetry.

2f. Sketch the graph below labeling all important features. Your picture should be large and clear.