

6. [12 points] For (a)-(d) below, write a formula for a function that satisfies the given criteria on the given line below. You do not need to show any work. No credit will be given for anything but your final answer, which must be written on the given line.

- a. [3 points] f has a critical point at $x = 0$, but has no local maximum or minimum at $x = 0$.

$$f(x) = \underline{\hspace{10em} x^3 \hspace{10em}}$$

- b. [3 points] g has domain $(-\infty, \infty)$ and is increasing and concave down for all x .

$$g(x) = \underline{\hspace{10em} -e^{-x} \hspace{10em}}$$

- c. [3 points] $h''(0) = 0$, but h has no inflection point at $x = 0$.

$$h(x) = \underline{\hspace{10em} x^4 \hspace{10em}}$$

- d. [3 points] j has an inflection point at $x = 0$ that is not a critical point.

$$j(x) = \underline{\hspace{10em} \sin x \hspace{10em}}$$