Quiz 8

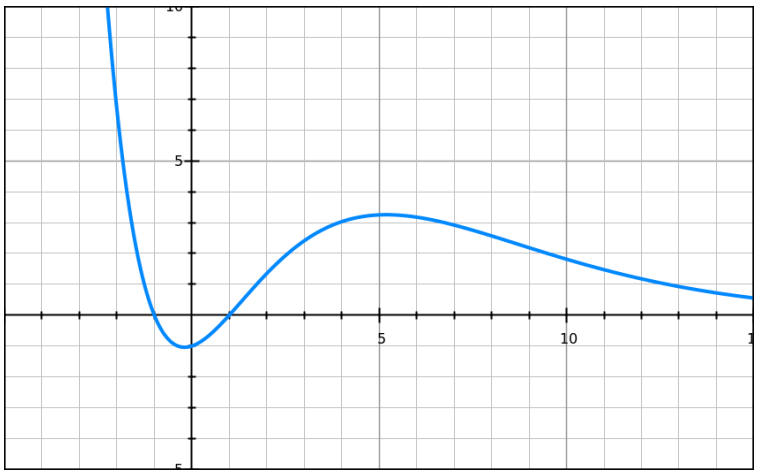
Name: _____

1. [5 pts] Find the inflection points of the following function. [You may use the back of this paper for more room.]

$$g(x) = x^4 - 4x^3 + 6x^2 - 3x - 1$$

$g'(x) = 4x^3 - 12x^2 + 12x - 3$, so $g''(x) = 12x^2 - 24x + 12 = 12(x-1)^2$ by factoring. So, a **possible** inflection point arises when $x = 1$ since this is when $g''(x) = 0$. However, $g''(0) = 12 > 0$ and $g''(2) = 12 > 0$, so the concavity is up before and after $x = 1$. Thus, this is not an inflection point.

2. Below is a graph of the derivative of $f(x)$.



   (a) [2 pts] What are the inflection points of f? Find then the slope on the graph equals 0. This happens at $x \approx 0$ and $x \approx 5$.

   (b) [3 pts] On which intervals is f concave up? This is when the graph above is increasing. This is on the interval $(0, 5)$.