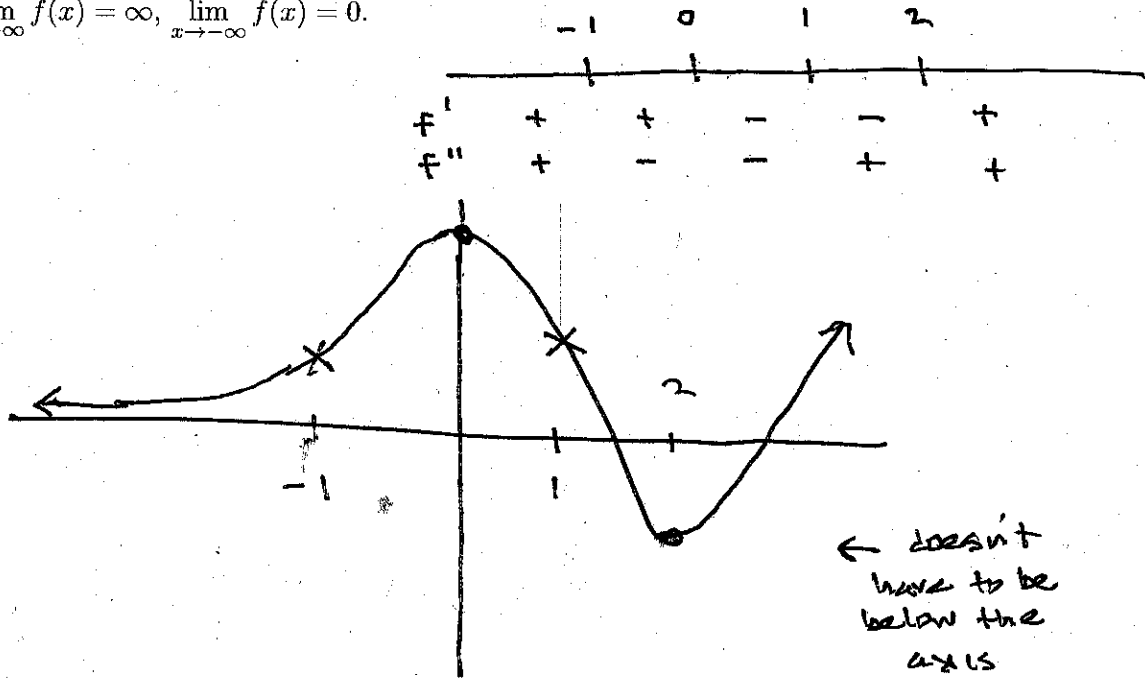


Name: _____

Quiz 15, section 4.5

1. (5 pts) Sketch the graph of $f(x)$ if (a) $f(x)$ is continuous, (b) $f(x)$ is increasing $(-\infty, 0) \cup (2, \infty)$ and is decreasing on $(0, 2)$, (c) $f(x)$ is concave up on $(-\infty, -1) \cup (1, \infty)$, and (d) $\lim_{x \rightarrow \infty} f(x) = \infty$, $\lim_{x \rightarrow -\infty} f(x) = 0$.



2. (5 pts) Sketch a rough graph of $f(x) = x^3(x-2)^2$ using only roots and asymptotes.

$\textcircled{2} x=0$ $x=2$ $\textcircled{3}$ \cup or \cap
 $\left(\begin{array}{c} \text{---} \\ \text{---} \end{array} \right)$

end behavior: $f(x) \approx x^3 - x^2 = x^2(x-1)$
 as $x \rightarrow +\infty$, $f(x) \rightarrow +\infty$ $\textcircled{4}$
 as $x \rightarrow -\infty$, $f(x) \rightarrow -\infty$ $\textcircled{1}$

start on left, sketch in order $\textcircled{1}$ to $\textcircled{4}$

