

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.