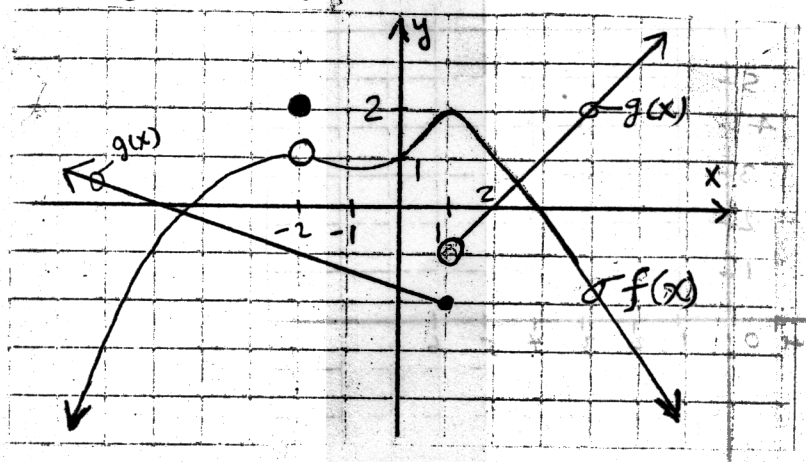
Calculus I; Professor Katiraie *Practice* Quiz Three

Name:_____ Date:_____

1) Use the Limit Laws and the Graphs of f and g in the following figure to evaluate the following limits, if they exist. **(1 Pt Each)**



a) $\lim_{x\to -2}\{-2f(x)+10g(x)\}$

b) $\lim_{x\to 2} -2\bullet\left\{\frac{f(x)}{g(x)}\right\}$

c) $\lim_{x\to 1}\{3f(x)g(x)\}$

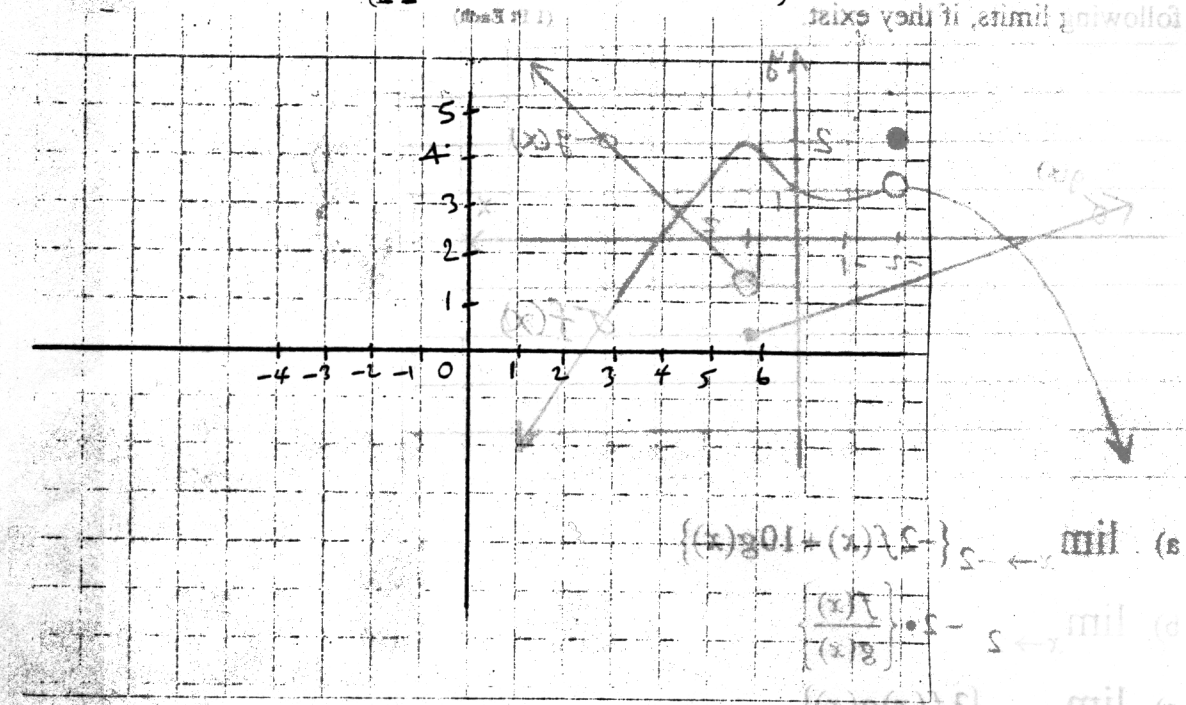
2) Algebraically find the following limit. (please show all your work, you may verify your answer with your calculator, but for credit you must do this problem algebraically):

$$\lim_{t\to 0}\frac{\sqrt{t^2+16}-4}{t^2}$$

(2 Pts)

3) Find the numbers at which the following function is **discontinuous.** **(3 Points)**

$$f(x)=\begin{cases} 2+x & \text{if } x<-1 \\ x^3 & \text{if } -1 \le x<1 \\ [\![x]\!] & \text{if } 1 \le x \le 6 \end{cases}$$



4) Use the Intermediate Value Theorem to show that there is a root of the following equation in the specified interval. **(2 Points)**

$$x^2-\sqrt{x+1}=0, \qquad (1\ ,\ 2)$$