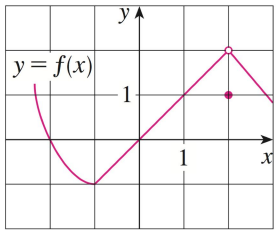
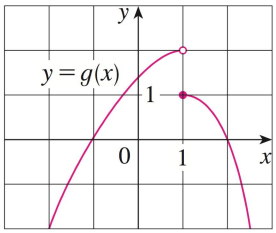
Math 1300-005 - Spring 2017

Using the Limit Laws - 1/25/17

Guidelines: Please work in groups of two or three. Please show all work and clearly denote your answer.

1. The graphs of f and g are given. Use them to evaluate each limit, if it exists. If the limit does not exist, explain why.





(a) $\lim_{x\to 2}[f(x) + 3g(x)]$

(b) $\lim_{x\to 1}[2f(x) + g(x)]$

(c) $\lim_{x\to 0}[f(x)g(x)]$

(d) $\lim_{x\to -1}\dfrac{f(x)}{g(x)}$

(e) $\lim_{x\to 2}[x^3 f(x)]$

(f) $\lim_{x\to 1}\sqrt{3 + f(x)}$

2. Evaluate each limit and justify each step by indicating the appropriate Limit Law(s).

(a) $\lim_{x\to 8}(1 + \sqrt[3]{x})(2 - x^2)$

(b) $\sqrt{\dfrac{2x^2 + 1}{3x - 2}}$

3. Find the limit by simplifying the function. Also, explain why the direct substitution property is not valid.

$$\lim_{h\to 0} \frac{(4+h)^2 - 16}{h}$$

4. Find the limit by rationalizing the function.

$$\lim_{x\to 0} \frac{\sqrt{1+x} - 1}{x}$$

5. It is true that

$$\lim_{x\to 0} \frac{|x|}{x}$$

does not exist. In your groups, work out and discuss why this is so.