Recall your trig identities
(write these in terms of sinx and cosx):

$\csc(x) = \frac{1}{\sin(x)}$ $\sec(x) = \frac{1}{\cos(x)}$

$\tan(x) = \frac{\sin(x)}{\cos(x)}$ $\cot(x) = \frac{\cos(x)}{\sin(x)}$

$\cot(x)\sin(x) = \frac{\cos(x)}{\sin(x)}\sin(x)$

Mar 6-3:18 PM

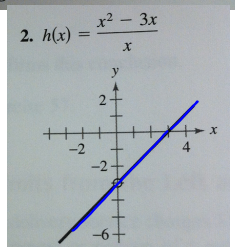
$\lim_{h\to 0} \frac{\frac{1\cdot 3}{3+h} - \frac{1}{3}}{h} = \frac{3}{3(3+h)} + \frac{(3+h)}{3(3+h)} = \frac{-h}{3(3+h)}$

$\frac{-h}{3(3+h)} \cdot \frac{1}{h} \quad \lim_{h\to 0} \frac{-1}{3(3+h)} = \frac{-1}{9}$

Mar 27-10:45 AM

In Exercises 1–4, use the graph to determine each limit (if it exists). Then identify another function that agrees with the given function at all but one point.

2. $h(x) = \frac{x^2 - 3x}{x}$



$\lim_{x\to -2} h(x) = -4$

$\lim_{x\to 0} h(x) = -3$

$\lim_{x\to 3} h(x) = 0$

$\frac{x^2-3x}{x}$ $\frac{x(x-3)}{x}$ $h_2(x) = x-3$

p. 798, #1 (HW)

Mar 6-3:03 PM

Example | p. 799, #72

$\lim_{h\to 0} \frac{f(x+h) - f(x)}{h}$ $f(x) = \sqrt{x-2}$

1. $f(x+h) = \sqrt{x+h-2}$
2. $\frac{(\sqrt{x+h-2} - \sqrt{x-2})}{h} \cdot \frac{(\sqrt{x+h-2} + \sqrt{x-2})}{(\sqrt{x+h-2} + \sqrt{x-2})} = \frac{x+h-2-(x-2)}{h(\sqrt{x+h-2} + \sqrt{x-2})}$
3. $\lim_{h\to 0} \frac{1}{\sqrt{x+h-2} + \sqrt{x-2}}$

$\frac{1}{\sqrt{x-2} + \sqrt{x-2}} = \frac{1}{2\sqrt{x-2}}$

p. 799, #69 (HW)

Mar 6-3:06 PM

#77: Find velocity when t=1 $s(t) = -16t^2 + 128$

$$\lim_{t \to a} \frac{S(a) - S(t)}{a - t}$$

$$\lim_{t \to 1} \frac{S(1) - S(t)}{1 - t} = \frac{-16(1)^2 + 128 - (-16t^2 + 128)}{1 - t}$$

$$= \frac{-16 + 128 + 16t^2 - 128}{1 - t}$$

$$= \frac{16t^2 - 16}{1 - t}$$

$$\frac{16(t^2 - 1)}{1 - t} = \frac{16(t-1)(t+1)}{-1(-1+t)} = \lim_{t \to 1} -16(t+1)$$

$$-16(1+1)$$

$$-16(2)$$

$$-32 \text{ ft/sec}$$

Mar 28-11:37 AM

HOMEWORK

...more algebraic limits

11.2 (p798): 1-11 odd, 17-27 odd, 53, 57, 69-77 odd

Mar 6-2:55 PM