

# Calculus AB

1-3

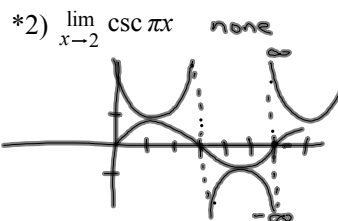
(Day 2 - Text)

## Evaluating Limits Analytically

Find the limit of the trigonometric function.

$$*1) \lim_{x \rightarrow \frac{\pi}{6}} \sin x = \frac{1}{2}$$

Since there are no domain restrictions with  $\sin(x)$ , we can just substitute  $\pi/6$  for  $x$ .



Since there is an asymptote at  $x=2$ , we have to test the left and right limits.

Use the information to evaluate the limits. (pg 67)

$$38) \lim_{x \rightarrow c} f(x) = \frac{3}{2}$$

$$\lim_{x \rightarrow c} g(x) = \frac{1}{2}$$

$$a) \lim_{x \rightarrow c} [4f(x)] = 6$$

$$b) \lim_{x \rightarrow c} [f(x) + g(x)] = 2$$

$$c) \lim_{x \rightarrow c} [f(x)g(x)] = \frac{3}{4}$$

$$d) \lim_{x \rightarrow c} \frac{f(x)}{g(x)} = 3$$

Find the limit (if it exists). (Do these samples as needed by class)

$$56) \lim_{x \rightarrow 3} \frac{(\sqrt{x+1} - 2)(\sqrt{x+1} + 2)}{(x-3)(\sqrt{x+1} + 2)} = \frac{\cancel{x+1} - 4}{(x-3)(\sqrt{x+1} + 2)} = \frac{1}{\sqrt{4} + 2} = \frac{1}{4}$$

$$60) \lim_{x \rightarrow 0} \frac{\frac{41}{4(x+4)} - \frac{1(x+4)}{4(x+4)}}{x} = \frac{4 - (x+4)}{4(x+4)} = \frac{4 - x - 4}{4(x+4)} = \frac{-1}{4(x+4)} = \frac{-1}{16}$$