Assignment
P. 837 (5-20)

Trig 12.2
Techniques to Evaluating Limits

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Again

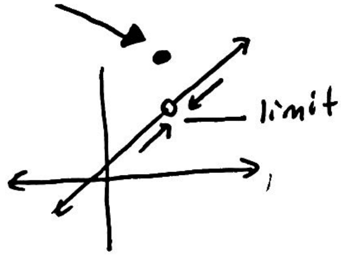
What it looks like the graph is going to for a y-value

$\lim_{x \to c^-} f(x)$ from <u>left</u> side

$\lim_{x \to c^+} f(x)$ from <u>right</u> side

$\lim_{x \to c} f(x)$ from <u>both</u> sides (has to be the same)

$f(x)$ actual point (y-value)



When substitution does NOT work.

(7) $\lim_{x \to 6} \frac{x^2+36}{x-6}$ (If we substitute 6 in for x we get zero in denominator)

Factor $\lim_{x \to 6} \frac{\cancel{(x-6)}(x+6)}{\cancel{x-6}}$

Now substitute $\lim_{x \to 6} x+6 = 6+6 = \boxed{12}$

(11) $\lim_{x \to 0} \frac{\sqrt{x+25} - 5}{x}$

mult by conjugate $\lim_{x \to 0} \frac{(\sqrt{x+25} - 5)}{x} \frac{(\sqrt{x+25} + 5)}{(\sqrt{x+25} + 5)}$

only mult the conjugate $\lim_{x \to 0} \frac{x + 25 - 25}{x(\sqrt{x+25} + 5)} = \lim_{x \to 0} \frac{\cancel{x}}{\cancel{x}(\sqrt{x+25} + 5)}$ ← x cancels

$\lim_{x \to 0} \frac{1}{\sqrt{x+25} + 5} = \frac{1}{\sqrt{25} + 5} = \boxed{\frac{1}{10}}$

(15) $\lim_{x \to 0} \frac{\frac{1}{x+1} - 1}{x}$ get rid of (x+1) in denominator by mult every term by (x+1) (Like mult by common denom.)

$\lim_{x \to 0} \left(\frac{\frac{1}{x+1} - 1}{x} \right) \frac{x+1}{x+1}$

$\lim_{x \to 0} \frac{1 - (x+1)}{x(x+1)} = \lim_{x \to 0} \frac{1 - x - 1}{x(x+1)} = \lim_{x \to 0} \frac{-\cancel{x}}{\cancel{x}(x+1)} = \lim_{x \to 0} \frac{-1}{x+1} = \frac{-1}{0+1}$

$\boxed{-1}$