1.3B Functions w/ Problems

A. $\lim_{x \to 2} \frac{x^2 - 4}{x - 2} = \frac{0}{0}$ } Indeterminant Form

$\frac{0}{0}$ = Got work to do

$$\lim_{x \to 2} \frac{x^2 - 4}{x - 2} = \frac{0}{0}$$

$$\lim_{x \to 2} \frac{(x+2)(x-2)}{x-2}$$

$$\lim_{x \to 2} x + 2 = 4$$

Ex. $\lim_{x \to 2} \frac{2 - x}{x^2 - 4} = \frac{0}{0}$

$\lim_{x \to 2} \frac{-1(x - 2)}{(x+2)(x-2)} = -\frac{1}{4}$

Ex $\lim_{x \to 2} \dfrac{x^2-5x-14}{x^2+8x+12} = \dfrac{-20}{32} = -\dfrac{5}{8}$

Ex. $\lim_{x \to 0} \dfrac{\sqrt{2+x} - \sqrt{2}}{x} \cdot \dfrac{\sqrt{2+x} + \sqrt{2}}{\sqrt{2+x} + \sqrt{2}}$

$\lim_{x \to 0} \dfrac{2+x-2}{x(\sqrt{2+x}+\sqrt{2})} = \dfrac{1}{\sqrt{2+x}+\sqrt{2}} = \dfrac{1}{2\sqrt{2}}$

B. Special Trig Limits

1. $\lim_{x \to 0} \frac{\sin x}{x} = 1$

$\lim_{x \to 0} \frac{1 - \cos x}{x} = 0$

Ex. $\lim_{x \to 0} \frac{4 \sin x}{x} = 4$

Ex. $\lim_{x \to 0} \frac{\tan x}{x} = 1$

$\lim_{x \to 0} \frac{\sin x}{x \cos x} = 1 \cdot \lim_{x \to 0} \frac{1}{\cos x}$

1.3 41-44

45-55 odd

59-61

67-72

$\frac{\sin x}{x} \cdot \frac{1}{\cos x}$