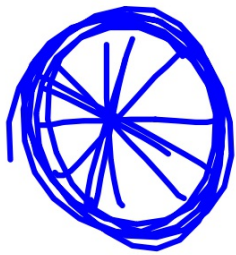


1.3B Functions w/ Problems

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



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

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

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

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

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

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

$$\underline{\underline{Ex}} \quad \lim_{x \rightarrow 2} \frac{x^2 - 5x - 14}{x^2 + 8x + 12} = \frac{-20}{32} = -\frac{5}{8}$$

$$\text{Ex. } \lim_{x \rightarrow 0} \frac{\sqrt{2+x} - \sqrt{2}}{x} \cdot \frac{\sqrt{2+x} + \sqrt{2}}{\sqrt{2+x} + \sqrt{2}}$$

$$\lim_{x \rightarrow 0} \frac{\cancel{2+x} - \cancel{2}}{x(\sqrt{2+x} + \sqrt{2})} = \frac{1}{\sqrt{2+x} + \sqrt{2}} = \frac{1}{2\sqrt{2}}$$

B. Special Trig Limits

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

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

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

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

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

1.3 41-44

45-55 odd

59-61

67-72

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