MTH 132 - Quiz 1

16 May 2014

Name: Solutions

Justify all your work to receive full credit. No notes, books, calculators, phones, or any electronic devices are allowed on this quiz. Good luck!

Problem 1. *(6 points) Compute the limits:*

(a)

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

(b)

$$\lim_{t\to 0} \frac{\tan t}{t(t+3)}$$

(c)

$$\lim_{w\to 0^+} \frac{\sin(2\sqrt{w})}{\sqrt{w}}$$

a) $\lim_{x\to 2} \frac{x^2-4}{x-2} = \lim_{x\to 2} \frac{(x-2)(x+2)}{x-2} = 2+2 = \boxed{4}$.

b) $\lim_{t\to 0} \frac{\tan t}{t(t+3)} = \lim_{t\to 0} \frac{\sin t}{t} \cdot \frac{1}{(\cos t)(t+3)}$

$= \left(\lim_{t\to 0} \frac{\sin t}{t}\right)\left(\lim_{t\to 0} \frac{1}{(\cos t)(t+3)}\right)$

$= 1 \cdot \frac{1}{(\cos 0)(0+3)} = \boxed{\frac{1}{3}}$.

c) $\lim_{w\to 0^+} \frac{\sin(2\sqrt{w})}{\sqrt{w}} = 2\lim_{w\to 0^+} \frac{\sin(2\sqrt{w})}{2\sqrt{w}} = 2\cdot 1 = \boxed{2}$