# AUC AP Calculus AB

Assignment 5.

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The deadline for all homework assignments is the one specified in Archie before 11:59 pm. As discussed in class, It must be correctly uploaded in order to be graded. Show all your work and justifications.

Compute the following limits:

a) $\lim_{x\to 0} \frac{\sin(x^2)}{x^2}$ b) $\lim_{x\to 1} \frac{\sin(x-1)}{x-1}$ c) $\lim_{x\to 2} \frac{\sin(x^2-4)}{x-2}$

**65.** $\lim_{x\to 0} \frac{\sin x}{5x}$

**66.** $\lim_{x\to 0} \frac{3(1-\cos x)}{x}$

**67.** $\lim_{x\to 0} \frac{\sin x(1-\cos x)}{x^2}$

**68.** $\lim_{\theta\to 0} \frac{\cos\theta \tan\theta}{\theta}$

**69.** $\lim_{x\to 0} \frac{\sin^2 x}{x}$

**70.** $\lim_{x\to 0} \frac{\tan^2 x}{x}$

**71.** $\lim_{h\to 0} \frac{(1-\cos h)^2}{h}$

**72.** $\lim_{\phi\to \pi} \phi \sec\phi$

**73.** $\lim_{x\to \pi/2} \frac{\cos x}{\cot x}$

**74.** $\lim_{x\to \pi/4} \frac{1-\tan x}{\sin x - \cos x}$

**75.** $\lim_{t\to 0} \frac{\sin 3t}{2t}$

**76.** $\lim_{x\to 0} \frac{\sin 2x}{\sin 3x}$ $\left[\textit{Hint}: \text{Find } \lim_{x\to 0}\left(\frac{2\sin 2x}{2x}\right)\left(\frac{3x}{3\sin 3x}\right).\right]$