

- Show all your work for each problem; show enough work to fully justify your answer.
- Simplify all answers as far as possible.
- All numerical answers must be in terms of actual numbers and standard constants like π and e .

(1) [Points: 10] Evaluate the limits:

(a) $\lim_{h \rightarrow 0^+} \frac{\sin 5h}{h}$

(b) $\lim_{h \rightarrow 0^+} \frac{\cos 5h}{h}$

(2) [Points: 5] Simplify to a single trig function: $\sin 4x \cos 4x$.

(3) [Points: 10] Find y' if $y = \sin^2 3x \cos^2 3x$.