

## Worksheet 10/09/2024

1) Find the following limits.

a)  $\lim_{x \rightarrow 0} \frac{\sin(3x) \tan(5x)}{x \sin(4x)}$

b)  $\lim_{x \rightarrow \pi} \frac{\sin x}{x - \pi}$

c)  $\lim_{x \rightarrow \frac{\pi}{2}} \frac{\cos x}{2x - \pi}$

2) Find the derivative of the given functions.

a)  $f(x) = e^{\sin x}$

b)  $g(t) = \sin(e^t)$

c)  $f(x) = \cos(x^2 + x)$

d)  $h(u) = e^{3u^2 + 2u + 1}$

e)  $f(x) = \tan^3(e^{2x})$