

# Math 199 CD2: L'Hopital Rule

October 8, 2021

1. Find the following limit. It is not always straight forward that you can apply L'hospital rule. But also sometimes you don't even need it.

(a)  $\lim_{x \rightarrow 0^+} \ln(x) \sin(x)$

(b)  $\lim_{x \rightarrow \infty} \frac{e^x - e^{-x}}{e^x + e^{-x}}$

(c)  $\lim_{x \rightarrow 1} \frac{\tan x}{x^2}$

$$(d) \lim_{x \rightarrow 1} \frac{\ln x}{\tan \pi x}$$

$$(e) \lim_{x \rightarrow 0^+} x^x$$

$$(f) \lim_{x \rightarrow 0^+} x^{\sin x}$$