

Worksheet

Problem 1. Find the limit $\lim_{x \rightarrow -1^+} \sin^{-1}(x)$.

Problem 2. Find y' if $\tan^{-1}(xy) = 1 + x^2y$.

Problem 3. Show that $\frac{1 + \tanh x}{1 - \tanh x} = e^{2x}$.

Problem 4. Find the derivative of $y = x^2 \sinh^{-1}(2x)$.

Problem 5. Using L'Hospital rule find the limits:

a) $\lim_{x \rightarrow 0} \frac{e^{3x} - 1}{x}$

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

c) $\lim_{x \rightarrow 0} \left(1 + \frac{a}{x}\right)^{bx}$