

Final Review 4 – Miscellaneous Problems

1. Find the derivative of $\frac{1}{\ln x}$.

2. Calculate y' where $y = (\arctan x)^{\cos x}$.

3. Show the equation $0 = x^3 - 6x^2 - 10x + 1$ has 3 roots.

4. Show if $f(1) = -1$, $f'(1) = 2$ and $f''(x) < 0$ for all x , then $f(3) < 3$.

5. Find

$$\lim_{x \rightarrow 1^+} \left(\frac{x}{x-1} - \frac{1}{\ln x} \right).$$