Logarithmic Differentiation WS

Find the first derivative of each function

1) $y = x^{(e^x)}$

2) $y = 2^{\sin^{-1}(x)}$

3) $y = (1+x)^{\frac{1}{x}}$

4) $y = e^{\ln(x^2+1)}$

5) $y = (\ln x)^{\ln x}$

6) $y = \left(\frac{1+x}{1-x}\right)^x$