

**MATHEMATICS**  
**Monday October 19 2015**  
**Fourth Exercise Class**

1) Study domain sign and intersection with axes of the following functions

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

$$y = \log_{\frac{1}{2}}\left(\frac{x-2}{x^2+1}\right)$$

$$y = \frac{1}{x} \log\left(\frac{9-x^2}{4-x^2}\right)$$

$$y = x^{\frac{2\log x - 3}{\log x - 2}}$$

$$y = \log\left(\frac{x^2-5x+6}{x^2-7x+12}\right)$$

$$y = \log\left(2 - \left|\frac{2x+1}{x-3}\right|\right)$$

$$y = \log(\sqrt{4x^2 - 4x - 15} - 2x - 1)$$

$$y = \frac{x^2}{\ln|x|-1}$$

$$y = \sqrt{\log\left(\frac{x-1}{x}\right)}$$

$$y = \log\left(\frac{|x+2|}{|x|-1}\right)$$

$$y = xe^{\frac{x}{x^2-1}}$$

$$y = e^{-x} - e^{-3x}$$

$$y = \frac{e^x-1}{e^x+1}$$

$$y = \frac{2e^x}{e^x - e^{-x}}$$

$$y = \sqrt[4]{e^{2x} - e^x}$$

$$y = e^{\frac{1}{1-\sqrt{x+2}}}$$

$$y = \log(1 - 3e^x + 2e^{2x})$$

$$y = e^{\log^2\left(\frac{x}{x-1}\right) + \log(3x-3) + 2}$$

$$y = \log\left(\frac{e^{2x}}{e^x-1}\right)$$

$$y = \frac{e^x}{x} - 1$$