

## Homework 2

1. Compute the following limits

- a)  $\lim_{x \rightarrow 1} \frac{x^2 + x - 3}{x + 1},$
- b)  $\lim_{x \rightarrow 1/3} \frac{x \sin \pi x}{1 + \cos \pi x},$
- c)  $\lim_{x \rightarrow -1} (x^2 + 3x - 7)$

2. Compute the following limits

- a)  $\lim_{u \rightarrow -2} \frac{4 - u^2}{2 + u},$
- b)  $\lim_{x \rightarrow 1} \frac{\frac{1}{x} - 1}{x - 1},$
- c)  $\lim_{x \rightarrow 0} \frac{\sqrt{x+1} - 1}{x},$
- d)  $\lim_{x \rightarrow 0^+} \frac{\sin x}{\sqrt{x}}.$

3. Compute

- a)  $\lim_{x \rightarrow 0} x^2 e^{-x},$
- a)  $\lim_{x \rightarrow 1} x^2 e^{-x}.$