

# Calculus Honors - M7H

## Extrema - Homework 2

For each of the following functions:

- Find its domain
- Study its monotonicity
- Find its extrema (if there are any)
- Study its concavity
- Find its inflection points (if there are any)

(i)  $f(x) = x + \frac{4}{x}$

(v)  $k(x) = \frac{x+4}{x+7}$

(ii)  $g(x) = x\sqrt{9-x^2}$

(vi)  $m(x) = \frac{e^x}{x+1}$

(iii)  $h(x) = xe^{-x}$

(iv)  $q(x) = \sqrt{x+1} + \sqrt{5-x}$

(vii)  $P(x) = \frac{\ln x}{x}$