

HW6

- pages 114–119, problems 1,2,4,5.
- Find the limits

$$\lim_{x \rightarrow +\infty} x^3 (\sin(x^{-1}) - x^{-1}), \quad \lim_{x \rightarrow 1} \frac{1 - \cos(x - 1)}{\tan^2(x - 1)}.$$

- Suppose f is continuously differentiable on $[0, \infty)$ (that is, it is differentiable and the derivative is continuous at every point of $[0, \infty)$) and $|f'(x)| \leq 1$ for all $x \geq 0$. Is f bounded on $[0, \infty)$? Is it uniformly continuous on $[0, \infty)$?