Differential Equations Seminar: Week 10 Exercises

1. Determine if the following functions $f(t, y)$ satisfy a local or uniform Lipschitz condition.

a) $|y|$

b) $t^2|y|$

c) $\tan^{-1}(y)$

d) e^y

e) e^{-y^2}

2. Suppose a function $f(x)$ is differentiable on an interval D. Show f is Lipschitz on D (with Lipschitz constant K) if and only if f' is bounded on D (by K).