

## ME205: An Exercise on Euler's Method

Consider the following differential equation:

$$(1/x^2) \, dx/dt + 1/(t+x^{(1/2)}) = 0.$$

1. Rearrange the equation to a form suitable for the intuitive application of Euler's method.
2. Write Scilab code to integrate the equation and plot the solutions for a range of values of the step size  $h$ . Use a time range of  $[0:5]$  and an initial value of  $x = 20$ .
3. What happens when the step size  $h$  becomes large?
4. Estimate with precision (i.e. using a small value of  $h$ ) the true value of  $x$  at  $t = 0.5$ .

