MATH 226

Topics in Linear Algebra and Differential Equations

Assignment 3

Due: Friday, February 21

Read Section 2.1: "Separable Equations" and continue to work through **MATLAB onramp**: https://matlabacademy.mathworks.com/details/matlab-onramp/gettingstarted .

Problems

Section 1.3 Definitions, Classifications, and Terminology

Practice Problems 1.3: 1-31 odd (These exercises provide a lot of practice doing differentiation which will sharpen your skills)

You may not have encountered the hyperbolic sine function *sinh* (pronounced "cinch") and the hyperbolic cosine function *cosh* (pronounced the way it looks) before. They can be defined in various ways. Here is one:

$$\sinh x = \frac{e^x - e^{-x}}{2}, \cosh x = \frac{e^x + e^{-x}}{2}.$$

Observe that each of these functions is the derivative of the other.

Note also that

$$\left(\ln \cos t\right)' = \frac{(\cos t)'}{\cos t} = \frac{-\sin t}{\cos t}$$

Feedback Problems 1.3: 17, 31

Problem 31 features a nice application of the Fundamental Theorem of Calculus.