Environmental Modeling
Homework #1
Due on Thursday, September 13, 2012

Problem 1. Solve the following equations

$$x + y + z = 1$$
$$x - 2y + 3z = -5$$
$$2x + 4y - 6z = 9$$

using (1) the Matlab backslash "\", and (2) the Matlab matrix inverse function "inv()". Do you obtain the same results?

Problem 2. Use 1-arc second DEM and ArcGIS to delineate the watershed of Elm Fork of Trinity River at Gainesville. The outlet is chosen at the USGS stream gaging site described as follows:

USGS 08050400 Elm Fk Trinity Rv at Gainesville, TX
Latitude 33°37'27", Longitude 97°09'22" NAD27
Cooke County, Texas, Hydrologic Unit 12030103
Drainage area: 174 square miles
Contributing drainage area: 174 square miles,
Datum of gage: 700.00 feet above NGVD29.

The 1-arc second DEM data can be downloaded from this website:
http://viewer.nationalmap.gov/viewer/

You need to (1) report each step; (2) make a map showing the DEM overlain by the watershed boundary; (3) compute the drainage area and compare your estimated drainage area with the drainage area given in the above description.