From HOMEWORK, WEEK 8:

2. Stewart, section 4.1: #5, 31, 43, 45, 47, 49, 55, 57, 61, 70.

3. A sphere of radius 4 inches is sliced with two parallel planes: one passes through the equator and the other is $H$ inches above the first plane. The resulting portion of the sphere between the two planes is called a spherical segment; see the picture:

In Math 125, you will show that the volume $V$ of the spherical segment is given by this formula (which we will assume):

$$V = \pi H \left(16 - \frac{H^2}{3}\right).$$

(a) Find the volume of the spherical segment if $H = 3$.
(b) Find the rate of change of the volume with respect to $H$ of the spherical segment at $H = 3$.
(c) Use the tangent line approximation at $H = 3$ to estimate the value of $H$ that will yield a spherical segment having volume 125 in$^3$.

From HOMEWORK, WEEK 9

1. Stewart, section 4.3: #1,7,10,13,19,23,44,46,62(a,b).