Solutions to Application Problems assigned in class (set 1)

1) Find the area between $\sin x$ and $\cos x$ (one "cell"):

2) Find the volume of a pyramid with an equilateral triangle base of side length 2 and height 6:

3) Find the volume of the solids of revolution:

   a. between $y = x^2$ and $y = x^4$, about $x = 7$:

   b. between $y = x^3$ and $y = 4x$, about about $y = b$ (I said $y = 20$ in the morning class and changed it to something else, which I don't remember, in the afternoon class; this formula is valid for any $b \geq 8$.

   c. between $y = \ln x$, $y = 0$, $x = 2$, about $x = -3$:

4) Find work:

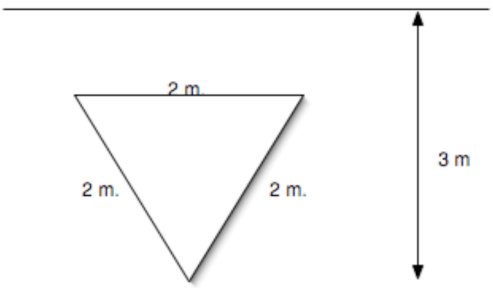
   a. Roll up a 40 ft chain 1/4 of the way, with a 20 lb bucket on the end (chain weighs 2 lb/ft)

   b. Pump all the water out of a cone (with sharp end down) with radius 2 ft, height 8 ft

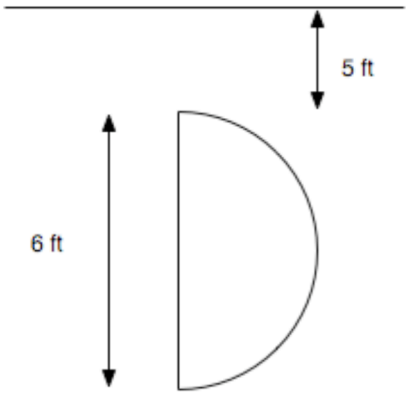
   c. Pump half the water out of a sphere of radius 5 ft

5) Find the fluid force ("hydrostatic force"):

   a.



b.



c.