Math 001B Assignment 8.3 Name________________________

DIRECTIONS To receive full credit, you must provide complete legible solutions to the following problems in the space provided. Transfer all your answers to the space provided on the test paper.

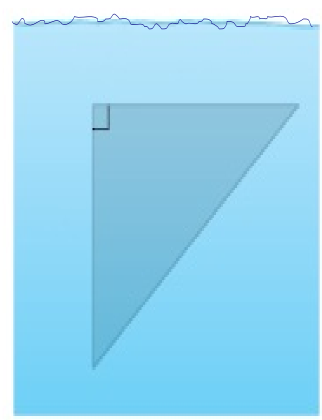
1. A tank is 6 m long, 4 m wide, 2 m high, and contains kerosene with density 820 kg/m^3 to a depth of 1.5 m. (Use 9.8 m/s2 for the acceleration due to gravity.)

a. Find the hydrostatic pressure on the bottom of the tank.

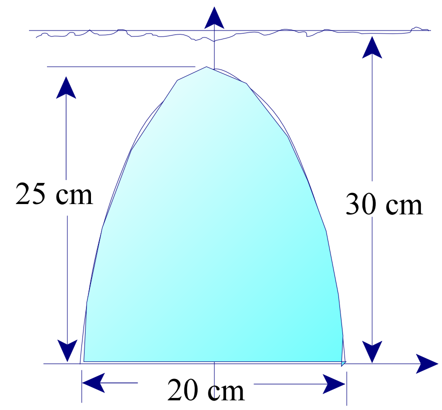
b. Find the hydrostatic force on the bottom of the tank.

c. Find the hydrostatic force on one end of the tank.

2. A triangular plate with height 6 ft and a base of 18 ft is submerged vertically in water so that the top is 4 ft below the surface. Set up an integral for the hydrostatic force against one side of the plate then find its exact value. Use weight density of water ρg.



4. A plate in the shape of a parabola with 20cm base and 25cm height as shown in the figure. The plate is submerged vertically in water so that the base is parallel with the surface. Set up an integral fr the hydrostatic force against one side of the plate then evaluate it. (Round your answer to the nearest whole number. Use 9.8 m/s2 for the acceleration due to gravity and weight density of water 1000 kg/m^3.)



4. A dam is inclined at an angle of 30° from the vertical and has the shape of an isosceles trapezoid 60 ft wide at the top and 30 ft wide at the bottom and with a slant height of 40 ft. Find the hydrostatic force on the dam when it is full of water. (Round your answer to the nearest whole number. Recall that the weight density of water is 62.5 lb/ft3.)