**King Abdulaziz University**

**Faculty of Meteorology, Environment and Arid Land Agriculture**

**Department of Hydrology and Water Resources Management**

**1st Term 1430/1431 15/11/1430**

# HWR 301

**Fluid Mechanics**

**Exercise 2**

 Assumes the following: Gravitational acceleration, g = 9.81 m/s2, Mass density of water, ρ = 1000 kg/m3 and Mercury specific gravity is 13.6

1. A U tube with both ends open to the atmosphere contains mercury in the lower part of the tube. If water is filled into one leg of the U-tube until the water column is 1 m above the mercury-water interface, what is the elevation difference between the mercury surfaces in the two legs?
2. If oil (sp. gr. 0.79) if filled into the other leg of the above manometer to height of 60 cm, what is the elevation difference between the mercury surfaces?
3. A manometer is mounted on a city water supply main pipe to monitor the water pressure in the pipe, as shown in the figure. Determine the water pressure?

1. Mercury is used as the manometer liquid to measure the water pressure in pipe A. Determine the pressure when the manometer readings are as shown in the figure?

1. In the given figure fluids A and B have specific gravities of 0.75 and 1.0, respectively. If mercury is used as the manometer liquid, determine the pressure difference between A and B?

