

**Problem #1**

(a) Calculate the vertical stress from a concentrated load of 200 kN at a point whose coordinates are  $X = 3$  m and  $Y = 4$  m at depths of 2, 4, 6, 8, 10, 15 m. Surface load coordinates are (0,0).

(b) Plot the results of part (a) using a convenient scale.

**Problem #2**

The center of a rectangular area at ground surface has Cartesian coordinates (0,0), and the corners have coordinates (6,15). All dimensions are in meters. The area carries a uniform pressure of 150 kPa.

(a) Estimate the increase in the vertical stress at a depth of 20 m below ground surface at each of the following locations: A(0,0), B(0,15), C(6,0), D(6,15) and E(10,25) using Boussinesq's method.

(b) Compare the results of part (a) with the 2:1 method. State your comments?

**Problem #3**

How far apart must two 20 m diameter tanks be placed such that their stress overlap is not greater than 10% of the contact stress at depths of 10, 20, and 30 m?

**Problem #4**

Three uniformly distributed loads of  $300 \text{ kN/m}^2$  each are applied to 10 X 10 m square areas as shown in the figure below. Determine the increase in the vertical stress at a depth of 15 m below point A. Use Newmark's influence chart.

