CIVE 6361 Fall 1997

- 1) The regional head in a confined aquifer is given as h(x,y) = ax + by + c where a=0.001, b=0, c=100m. Prepare a head (and flowline) map of a rectangular portion of the aquifer in the region x = 0 to 10,000 meters, y = 0 to 10,000 meters.
- 2) Suppose the transmissivity of the aquifer is  $10 \text{ m}^2/\text{day}$ . Use the principle of superposition to map the effect of a shall well located at the center of the region in problem #1. The well's radius is 1 meter and the redius of influence is 3000 meters. The discharge rate of the well is  $100 \text{ m}^3/\text{d}$ . Sketch flowlines on this second map. Recall that  $r^2 = x^2 + y^2$ . For this second exercise, it is easier to compute drawdown from the well and subtract this drawdown from the regional head distribution in problem #1.

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$$S(z,y) = \frac{2}{2\pi T} \ln \left( \frac{R^2}{\sqrt{(x-x_0)^2 + (y-y_0)^2}} \right)$$

$$h(x,y) = h_R(x,y) - S(x,y)$$

$$(if r^2)R^2$$

$$S_w = 0$$