

Assignment 2

Jan 8, 2020

Due: Feb 7

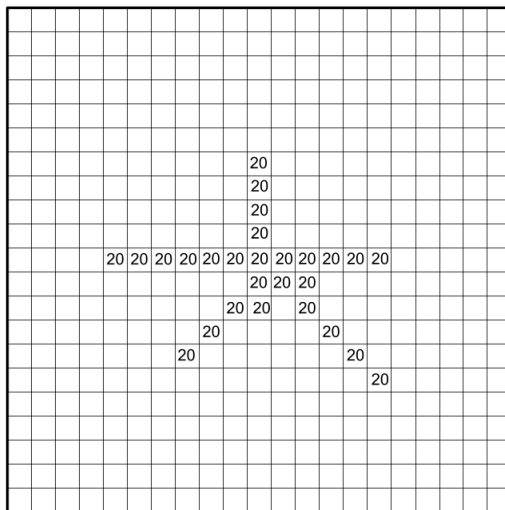
Calculate Pressure-Area Effects (have to read ahead)

Part 1: Shown below are 3 sets of pressure readings on a 10x10 pressure panel. Each sub panel is 300mm wide and 300mm high. (i.e the whole panel is 3m wide by 3m high). The sets are in order of time (ie time 1, time 2 and time 3). The numerical values in each cell represent the pressure in MPa on that sub-panel at that moment. In this part, rank the pressures and then determine the average pressure over 1, then 2 then 3 etc cells (a running average)

- Plot the three spatial pressure area curves for the three times.
- List the peak pressure and total force for each time.
- Fit a P/A equation to each of the 3 sets (in the form $P = P_o A^{ex}$).
- Find the process P/A curve (also in the form $P = P_o A^{ex}$).
- Estimate the average pressure and total area that might occur in a similar situation when the force would reach 100MN

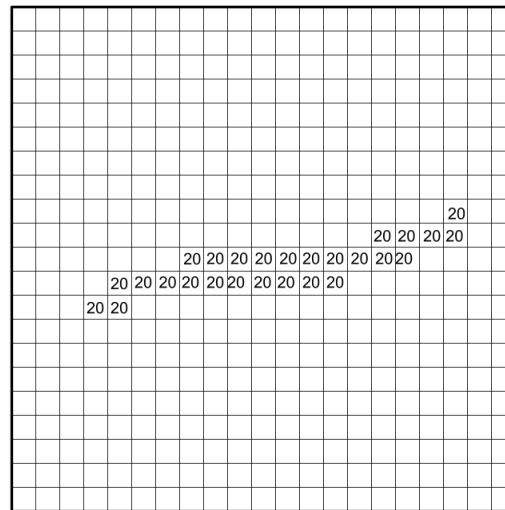
	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10		C1	C2	C3	C4	C5	C6	C7	C8	C9	C10		C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
R1																																
R2																																
R3						5																										
R4			1	2	2	8	2																									
R5			1	2	3	4																										
R6				2		1																										
R7																																
R8																																
R9																																
R10																																

Part 2: for the two cases shown below, do not use the rank-order method. Find the average pressures in concentric squares of increasing size. Can you think of a better way to characterize these pressures?



each cell is .3 x.3 m, with pressure in MPa

case (a)



blank cells have 0 MPa

case (b)