

EXERCISE 7.1 Trouble spots from recipe are: B, F, J, M (entrant corners), N, D, I (concentrated forces). See Figure E7.7 for a physical justification.

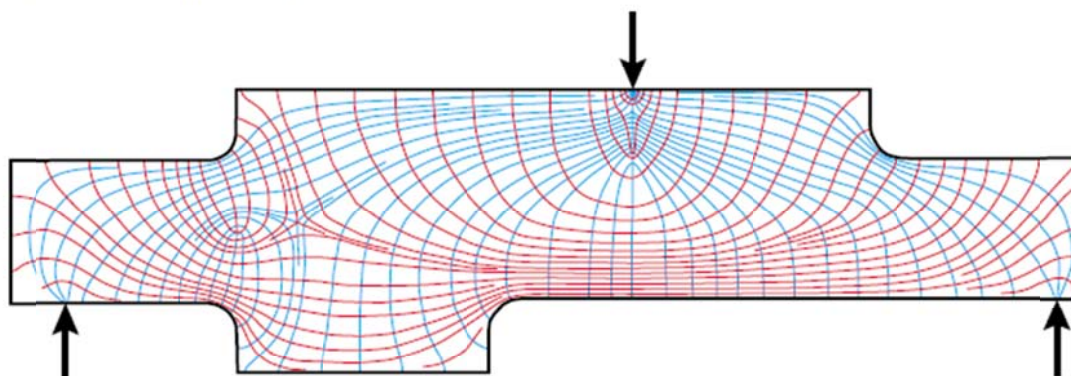


FIGURE E7.7. Figure shows principal stress trajectories or “isostatics.” They are drawn in red for tension and blue for compression. (Determined from experimental data gathered in 1964 photoelasticity project at UC Berkeley.) Trajectories “bunch up” in regions of high stress gradients near loads and entrant corners.

EXERCISE 7.2 What perhaps are the two simplest solutions for the transition zone are pictured in Figure E7.8.

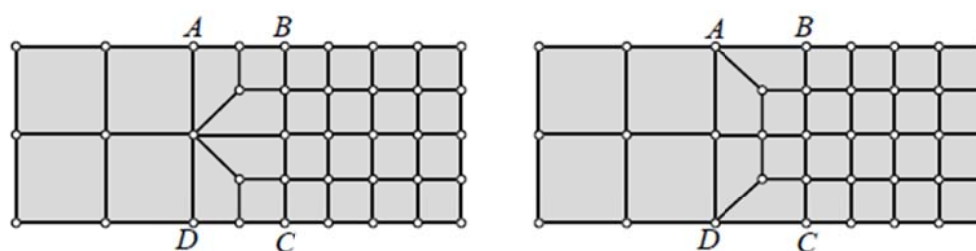


FIGURE E7.8. Two simple transition-mesh solutions for Exercise 7.2.

Several quadrilateral-based “transition meshes” are illustrated in Figure E7.9 for completeness; redrawn from Irons and Ahmad [148]. The solutions of Figure E7.8 are essentially variations of (e) and (f). Solution (d) is interesting in that it produces somewhat better looking element shapes.