



Figure P6-9

- 6.10** For the plane strain elements shown in Figure P6-10, the nodal displacements are given as

$$u_1 = 0.005 \text{ mm} \quad v_1 = 0.002 \text{ mm} \quad u_2 = 0.0 \text{ mm}$$

$$v_2 = 0.0 \text{ mm} \quad u_3 = 0.005 \text{ mm} \quad v_3 = 0.0 \text{ mm}$$

Determine the element stresses σ_x , σ_y , τ_{xy} , σ_1 , and σ_2 and the principal angle θ_p . Let $E = 70 \text{ GPa}$ and $\nu = 0.3$, and use unit thickness for plane strain. All coordinates are in millimeters.

- 6.11** Determine the nodal forces for (a) a linearly varying pressure p_x on the edge of the triangular element shown in Figure P6-11(a); and (b) the quadratic varying pressure shown in Figure P6-11(b) by evaluating the surface integral given by Eq. (6.3.7). Assume the element thickness is equal to t .
- 6.12** Determine the nodal forces for (a) the quadratic varying pressure loading shown in Figure P6-12(a) and the sinusoidal varying pressure loading shown in Figure P6-12(b)