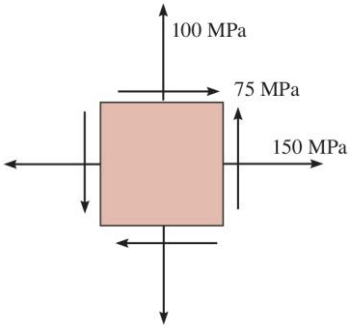
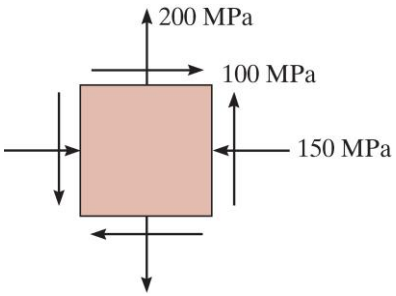
1. Determine the equivalent state of stress on an element at the same point oriented 60^0 clockwise (順時針) with respect to the element shown. Show the result on an element. [15%] Ans:47.5, 202, -15.8 MPa



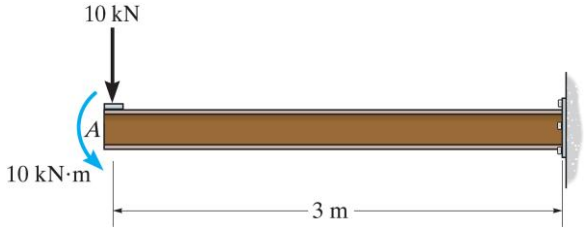
2. The state of stress at a point is shown on the element. (a) Determine the principal stresses and the corresponding orientation of the element. (b) Determine the maximum in-plane shear stress and average normal stress at the point, and specify the orientation of the element. You must use Mohr's circle to solve this problem. [20%] Ans:(a)227, -177 MPa, -14.9^0 (b) 202, 25 MPa, 30.1^0



3. The state of plane strain at a point has components $\varepsilon_x = 260(10^{-6})$, $\varepsilon_y = 320(10^{-6})$, $\gamma_{xy} = 180(10^{-6})$. (a) Determine the in-plane principal strains. (b) Determine the maximum in-plane shear strain and average normal strain. [15%] Ans: (a) 385, 195 (10^{-6}) (b) 190, 290 (10^{-6})

4. The state of plane strain at a point is represented on an element having components $\varepsilon_x = 200(10^{-6})$, $\varepsilon_y = 180(10^{-6})$, and $\gamma_{xy} = -300(10^{-6})$. Determine the state of strain on an element oriented 60^0 counterclockwise (逆時針) from the reported position. You must use Mohr's circle to solve this problem. [15%] Ans: 55.1, 325, 133 (10^{-6})

5. Determine the slope and deflection of end *A* of the cantilevered beam. E= 200 GPa and I=65.0 (10^6) mm^4. [15%] Ans: 0.00577 rad, -10.4 mm



6. Determine the equation of the elastic curve for the beam using the coordinates x_1 and x_2. Specify the beam's maximum deflection. EI is constant. [20%]
Ans:$EIv_1=Px_1(-x_1^2+L^2)/12$, $EIv_2=P(-4x_2^3+7L^2x_2-3L^3)/24$, $PL^3/8EI$