Problem 1:

The state of stress shown below has been determined for a machine component.

(a) Use Mohr's circle of stress to find all of the principal stresses, and sketch the stress block in this orientation and indicate the angle of rotation to this direction.

(b) Determine the maximum in-plane shearing stress, and sketch the stress block in this orientation and indicate the angle of rotation to this direction.

(c) Determine the absolute maximum shearing stress.

$\sigma_y =$ ___

$\sigma_x =$ ___

$\tau_{xy} =$ ___

$\sigma_z =$ ___