

Homework 6

Geology 3063

November 1, 2000

1. Draw a 2 dimensional Mohr Circle representation for the following stress conditions.

$$\sigma_1 = 7 \text{ GPa}$$

$$\sigma_2 = 1 \text{ GPa}$$

Determine σ_n and σ_s for planes oriented at 20° , 40° and 60° to σ_1 .

2. Assuming a joint system with a strike and dip of $N0^\circ E, 75^\circ W$, determine σ_n and σ_s on the joint surface if σ_1 is horizontal and has a magnitude of $12GPa$ and σ_2 is vertical and has a magnitude of $2GPa$.

What would σ_n and σ_s be if the joint surfaces were dipping to the East rather than to the West?

3. Use the Mohr Circle to “show” that maximum shear stress occurs on planes oriented at $\pm 45^\circ$ relative to σ_1 in 2-dimensional systems.