28. A stress element undergoes two normal stresses of $S_x \sim N(80,\ 8^2)$ MPa and $S_y \sim N(60,\ 6^2)$ MPa, and a shear stress of $\tau_{xy} \sim N(20,\ 2^2)$ MPa. Determine the mean and standard deviation of the first principal stress using the First Order Second Moment Method? Note that S_x, S_y and τ_{xy} are independent.

Answer: $\mu_S = 92.36$ MPa, $\sigma_S = 6.28$ MPa