7. A stress element is cut by an oblique plane with a normal n at an angle $\phi = 45^0$ counterclockwise from the x axis. If $S \sim N(120, 7.07^2)$ MPa, $\tau \sim N(-10, 5^2)$ MPa, $\tau_{xy} \sim N(50,5^2)$ MPa, and S, τ and τ_{xy} are independent, what is the distribution of stresses S_x and S_y?

Answer: $S_x \sim N(80, 10^2)$ MPa, $S_y \sim N(60, 10^2)$ MPa