

5. The diameter of a steel shaft is $d = 2$ in. It is fixed at point A and C , and is subjected to two torques acting at point B . If $T_1 \sim N(300, 30^2)$ lbf·in, $T_2 \sim N(100, 10^2)$ lbf·in, and T_1 and T_2 are independent, determine the distribution of the angle of twist at B .

Answer: $\theta_B \sim N\left(2.66(10^{-5}), (4.20(10^{-6}))^2\right)$ rad

