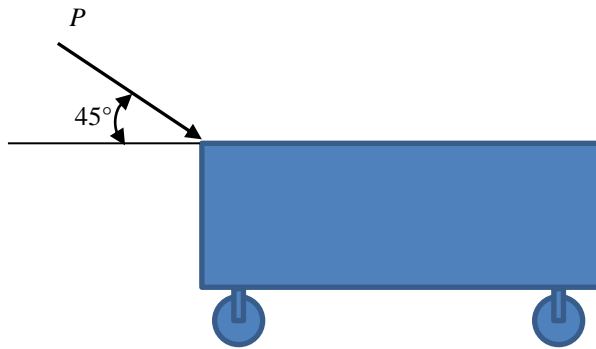


9. A random force $P \sim N(40, 5^2)$ lb is applied to push a cart with wheels with a radius of $r = 3$ in. The weight of the cart is also a random variable $W \sim N(1500, 20^2)$ lb and is independent of P . Given the coefficient of rolling resistance $a = 0.04$ in, determine the probability that the cart will start to move.



Answer

Finally, the probability that the force P can pull the cart is

$$P(Y > 0) = 1 - P(Y \leq 0) = 1 - \Phi\left(\frac{-\mu_Y}{\sigma_Y}\right) = 98.99\%$$