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- (a) Find the invariant interval between event  $A$  and  $B$ . Event  $A$  happens at point  $(x_A = 5, y_A = 3, z_A = 3)$  and at time  $t_A$  given by  $ct_A = 15$ ; event  $B$  occurs at  $(5, 8, 0)$  and  $ct_B = 10$ , both in system  $\mathcal{S}$ .
- (b) Find the invariant product of the 4-velocity with itself,  $\eta^\mu \eta_\mu$ .