

IMM - DTU

02405 Probability

2003-11-19

BFN/bfn

Question a) Let the coordinates of shot  $i$  be denoted by  $(X_i, Y_i)$ .

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Question a) Let the coordinates of shot  $i$  be denoted by  $(X_i, Y_i)$ . The difference between two shots  $(X_2 - X_1, Y_2 - Y_1)$

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Question a) Let the coordinates of shot  $i$  be denoted by  $(X_i, Y_i)$ . The difference between two shots  $(X_2 - X_1, Y_2 - Y_1)$  is two independent normally distributed random variables with mean

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Question a) Let the coordinates of shot  $i$  be denoted by  $(X_i, Y_i)$ . The difference between two shots  $(X_2 - X_1, Y_2 - Y_1)$  is two independent normally distributed random variables with mean 0

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Question b) We have  $E(D^2)$

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Question a) Let the coordinates of shot  $i$  be denoted by  $(X_i, Y_i)$ . The difference between two shots  $(X_2 - X_1, Y_2 - Y_1)$  is two independent normally distributed random variables with mean 0 and variance 2. By a simple a scaling as in example 1 problem 2 page 361 we get  $E(D) = \sqrt{2}\sqrt{\frac{\pi}{2}} = \sqrt{\pi}$ .

Question b) We have  $E(D^2) = 4$

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Question a) Let the coordinates of shot  $i$  be denoted by  $(X_i, Y_i)$ . The difference between two shots  $(X_2 - X_1, Y_2 - Y_1)$  is two independent normally distributed random variables with mean 0 and variance 2. By a simple a scaling as in example 1 problem 2 page 361 we get  $E(D) = \sqrt{2}\sqrt{\frac{\pi}{2}} = \sqrt{\pi}$ .

Question b) We have  $E(D^2) = 4$  thus  $Var(D)$

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Question a) Let the coordinates of shot  $i$  be denoted by  $(X_i, Y_i)$ . The difference between two shots  $(X_2 - X_1, Y_2 - Y_1)$  is two independent normally distributed random variables with mean 0 and variance 2. By a simple a scaling as in example 1 problem 2 page 361 we get  $E(D) = \sqrt{2}\sqrt{\frac{\pi}{2}} = \sqrt{\pi}$ .

Question b) We have  $E(D^2) = 4$  thus  $Var(D) = 4 - \pi$ .