

## Quiz 8

**True/False** - No explanation needed. (2pts)

1. The  $z$ -score that we can use to compute  $P(0 \leq \bar{X} \leq \bar{\mu} + z\bar{\sigma})$  can be equivalently seen in the probability  $P(0 \leq Z \leq z)$ . True/False
2. If two random variables  $X$  and  $Y$  are independent, then  $\text{Var}[X+Y] = \text{Var}[X-Y]$ . True/False

**Problems** - Need justification. No justification means **zero!**

1. Let  $X_1, X_2$  be independent geometric random variables with probabilities  $p_1$  and  $p_2$ , respectively. Let  $Y = X_1 + X_2$ . Find  $\text{Cov}(X_1, 2Y)$ . (5pts)

2. Using the given part of the standard normal table, find the value of  $P(1.7 \leq X \leq 2.5)$ , where  $X$  follows the normal distribution with  $E[X] = 1$  and  $\text{Var}[X] = 4$ . (5pts)

<b>z</b>	<b>0.00</b>	<b>0.01</b>	<b>0.02</b>	<b>0.03</b>	<b>0.04</b>	<b>0.05</b>
<b>0.0</b>	0.0000	0.0040	0.0080	0.0120	0.0160	0.0190
<b>0.1</b>	0.0398	0.0438	0.0478	0.0517	0.0557	0.0596
<b>0.2</b>	0.0793	0.0832	0.0871	0.0910	0.0948	0.0987
<b>0.3</b>	0.1179	0.1217	0.1255	0.1293	0.1331	0.1368
<b>0.4</b>	0.1554	0.1591	0.1628	0.1664	0.1700	0.1736
<b>0.5</b>	0.1915	0.1950	0.1985	0.2019	0.2054	0.2088
<b>0.6</b>	0.2257	0.2291	0.2324	0.2357	0.2389	0.2422
<b>0.7</b>	0.2580	0.2611	0.2642	0.2673	0.2704	0.2734
<b>0.8</b>	0.2881	0.2910	0.2939	0.2969	0.2995	0.3023
<b>0.9</b>	0.3159	0.3186	0.3212	0.3238	0.3264	0.3289
<b>1.0</b>	0.3413	0.3438	0.3461	0.3485	0.3508	0.3513