King Fahd University of Petroleum & Minerals
Department of Mathematics & Statistics

STAT-319-Term171-Quiz3A

Name: ______________________ ID: ______________________ Sec.: __________ Serial: ______

The amount of cosmic radiation to which a person is exposed to while flying by jet is a random variable having the *normal distribution* with μ =4.35 mrem and σ = 0.50 mrem.

a. Find $P\left(\frac{4.02-4.35}{0.50} < Z < \frac{5-4.35}{0.50}\right)$. **(3-Points)**

$= P(-0.66 < Z < 1.30)$

$= \Phi(1.30) - \Phi(-0.66) = 0.903199 - 0.254627 = 0.648572.$ From the Standard Normal Table

b. What is the probability that a person on such flight is exposed to **at most** 4.61 mrem? **(3-Points)**

$P\left(Z \leq \frac{4.61-4.35}{0.50}\right) = P(Z \leq 0.52)$

$= \Phi(0.52) = 0.698468.$ From the Standard Normal Table

c. If a random sample of 16 passenger are measured on such flights, find the probability that the sample mean radiation measure will be **at most** 4.61 mrem. **(4-Points)**

$P\left(Z \leq \frac{4.61-4.35}{0.50/\sqrt{16}}\right) = P(Z \leq 2.08)$

$= \Phi(2.08) = 0.981237.$ From the Standard Normal Table

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STAT-319-Term171-Quiz3B

Name: ______________________ ID: ______________________ Sec.: ______________ Serial: ______

The amount of cosmic radiation to which a person is exposed to while flying by jet is a random variable having the *normal distribution* with μ =4.35 mrem and σ = 0.50 mrem.

a. Find $P\left(\frac{4.00-4.35}{0.50} < Z < \frac{5.02-4.35}{0.50}\right)$. **(3-Points)**

$= P(-0.7 < Z < 1.34)$

$= \Phi(1.34) - \Phi(-0.70) = 0.909877 - 0.241964 = 0.667913.$ From the Standard Normal Table

b. What is the probability that a person on such flight is exposed to **at most** 4.64 mrem? **(3-Points)**

$P\left(Z \le \frac{4.64-4.35}{0.50}\right) = P(Z \le 0.58)$

$= \Phi(0.58) = 0.719043.$ From the Standard Normal Table

c. If a random sample of 16 passenger are measured on such flights, find the probability that the sample mean radiation measure will be **at most** 4.64 mrem. **(4-Points)**

$P\left(Z \le \frac{4.64-4.35}{0.50/\sqrt{16}}\right) = P(Z \le 2.32)$

$= \Phi(2.32) = 0.98983.$ From the Standard Normal Table