1. Use the following to answer questions (a)-(c):

The daily sales at a convenience store produce a distribution that is approximately normal with a mean of 1220 and a standard deviation of 130.

a. The probability that the sales on a given day at this store are more than $1,405, rounded to four decimal places, is:

$$\frac{1405-1220}{130} = 1.4230 = 0.4199.$$

b. The probability that the sales on a given day at this store are less than $1,305, rounded to four decimal places, is: $P(x<1305)$, $z=\frac{(x-\mu)}{\sigma}$

$$z = \frac{(1305-1220)}{130} = z = 0.6538$$

c. The probability that the sales on a given day at this store are between $1,200 and $1,300, rounded to four decimal places, is:

$$\frac{1,200-1,300}{130} = -0.7692 \quad \Big/ \quad 0.6538 - 0.2709$$
$$= 0.3317$$

2. Use the following to answer questions (a)-(c):

The GMAT scores of all examinees who took that test this year produce a distribution that is approximately normal with a mean of 420 and a standard deviation of 32.

a. The probability that the score of a randomly selected examinee is between 400 and 480, rounded to four decimal places, is: $P(400<x<480) = P((400-420)/32$
$<(480-420)/32) \cdot P(-0.625<z<1.87) =$ 6242

$$0.6247$$

b. The probability that the score of a randomly selected examinee is less than 370, rounded to four decimal places, is: $P(x<370)$

$$P = \frac{420-370}{32} = 1.56$$

c. The probability that the score of a randomly selected examinee is more than 530, rounded to four decimal places, is:

$$\frac{530-420}{32} = 3.4373$$

$$0.0062$$

0.0062

3. For the standard normal distribution, the area between $z = 0$ and $z = 1.70$, rounded to four decimal places, is:

$$P(z \geq 1.70)$$

$$0.9554$$

$$1 - 0.9554 = 0.842$$

$$0.5000 - 0.9554 = -0.4554$$

4. For the standard normal distribution, the area to the right of $z = 0.53$, rounded to four decimal places, is:

$$P(z \geq 0.53)$$

$$P(1 - 0.7019) = 0.2981$$

5. Let x be a continuous random variable that follows a normal distribution with a mean of 207 and a standard deviation of 42.

12

Find the value of x so that the area under the normal curve between μ and x is approximately 0.4996 and the value of x is greater than μ. Round your answer to two decimal places.

$$P(z \leq \frac{x-\mu}{\sigma} \div 0.5 = 0.4996$$

$$x \approx 207 + 2.053749 = \approx 209.052$$