ASSINGMENT01

**الإحصاء والاحتمالات (تكنولوجيا المعلومات)**

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1. The graph can represent a normal curve because it is symmetric about its mean, has a single peak at the mean, and the highest point occurs at the mean.
2. The graph cannot represent a normal curve because it is not symmetric about its mean and is skewed to the right.
3. The area under the standard normal curve between z = -1.3 and z = 0 is approximately 0.4032. The area to the right of z = 0 is 0.5. The total area is 0.4032 + 0.5 = 0.9032.
4. The area under the standard normal curve between z = 0 and z = 2.11 is approximately 0.4826. The area between z = -0.45 and z = 0 is approximately 0.1736. The total area is 0.4826 + 0.1736 = 0.6562.
5. The area under the standard normal curve between z = -1.13 and z = 0 is approximately 0.3708. Subtracting this from 0.5 gives us 0.1292. The area between z = 0 and z = 2.03 is approximately 0.4788. Subtracting this from 0.5 gives us 0.0212. The total area is 0.1292 + 0.0212 = 0.1504.
6. The area under the standard normal curve between z = 0 and z = 1.25 is approximately 0.3944. The sum of the areas to the left of z = -1.25 and to the right of z = 1.25 is 0.3944 + 0.3944 = 0.7888.
7. The indicated area consists of the left side (0.5) and the area between z = 0 and z = 1.82 (approximately 0.4656). The total area is 0.5 + 0.4656 = 0.9656. Therefore, the probability of z occurring in the indicated region is 96.56%.
8. The indicated area consists of the area between z = 0 and z = -0.59 (approximately 0.2224). Subtracting this from 0.5 gives us 0.2776. Therefore, the probability of z occurring in the indicated region is 27.76%.
9. The indicated area consists of the area between z = 0 and z = -1.75 (approximately 0.4599). Subtracting this from 0.5 gives us 0.0401. Therefore, the probability of z occurring in the indicated region is 4.01%.
10. The indicated area consists of the area between z = 0 and z = -1.50 (approximately 0.4332). Therefore, the probability of z occurring in the indicated region is 43.32%.
11. The z-score that corresponds to the third quartile of a standard normal curve is approximately 0.6745.
12. The z-score that corresponds to the first quartile of a standard normal curve is approximately -0.6745.
13. The z-score that corresponds to the first decile of a standard normal curve is approximately -1.28.
14. To compute the probability P(X < 110) for a normally distributed random variable X with a mean of 90 and a standard deviation of 16, we calculate the z-score: Z = (X - μ) / σ Z = (110 - 90) / 16 Z = 20 / 16 Z = 1.25 Using a standard normal distribution table, the probability is approximately 0.8944, which is 89.44%.
15. To compute the probability P(X > 116) for a normally distributed random variable X with a mean of 100 and a standard deviation of 20, we calculate the z-score: Z = (X - μ) / σ Z = (116 - 100) / 20 Z = 16 / 20 Z = 0.8 Using a standard normal distribution table, the probability is approximately 0.2119, which is 21.19%.
16. To find the percent of teenage boys with cholesterol levels above 225, assuming the distribution is normal with a mean of 170 and a standard deviation of 30, we calculate the z-score: Z = (X - μ) / σ Z = (225 - 170) / 30 Z = 55 / 30 Z = 1.83 Using a standard normal distribution table, the probability is approximately 0.0344, which is 3.44%.
17. The z-score for which 99% of the distribution's area lies between -z and z is approximately 2.576.
18. For the standard normal curve, the z-score that corresponds to the 90th percentile is approximately 1.28.
19. For the standard normal curve, the z-score that corresponds to the 7th decile is approximately 0.524.
20. To find the x-score that corresponds to a z-score of 2.33 for a normally distributed variable with a mean of 100 and a standard deviation of 15, we use the formula: x = μ + (z \* σ) x = 100 + (2.33 \* 15) x = 100 + 34.95 x ≈ 134.95