1. Let \( x \) be a continuous random variable with a uniform distribution such that \( 4 \leq x \leq 14 \).

   (a) (2 points) Draw the uniform distribution below. Clearly mark.

   (b) (1 point) Find \( P(x = 10) \).

   (c) (2 points) Find \( P(x > 10.75) \).

   (d) (2 points) Find \( P(5.75 < x < 8.25) \).
(e) (4 points) Find \( x_1 \) and \( x_2 \) such that the middle area for this uniform distribution \( x_1 \) and \( x_2 \) is 0.8, that is \( P(x_1 < x < x_2) = .8 \).

2. Assume standard normal distribution. **Drawing & Shading Required.**
   
   (a) (2 points) \( P(1.25 < z < 2.25) \).

   (b) (2 points) Find \( P(z > 1) \).

   (c) (2 points) Find \( P(z < -1) \).

   (d) (3 points) Find \( P(z < -1.96 \text{ or } z > 1.96) \).
(e) (3 points) Find $k$ such that $P(z > k) = 0.10$.

(f) (2 points) Find the value of $z$.

3. Assume normal distribution with $\mu = 120$ and $\sigma = 8$. Find the following probabilities. Drawing & Shading Required.

(a) (2 points) $P(115 < x < 125)$. 

(b) (2 points) Find $P(x > 126)$. 

(c) (2 points) Find $P(x < 100)$. 

(d) (3 points) Find $k$ such that $P(x > k) = 0.20$. 

(e) __________

(f) __________
(e) (4 points) Find $x_1$ and $x_2$, rounded to a whole number, such that the middle area under the curve between $x_1$ and $x_2$ is 0.98, that is $P(x_1 < x < x_2) = .98$.

4. The heights of college students are normally distributed with a mean of 68.5 inches and a standard deviation of 2.7 inches. Find the probability that any randomly selected student has a height

(a) (3 points) less than 63.2 inches.

(b) (3 points) greater than 72.8 inches.

(c) (3 points) between 63.2 and 72.8 inches.

(d) (3 points) Find the height that separates the top 10% from the rest. Round your answer to the nearest whole inch.