

Name: Solutions

Math 130

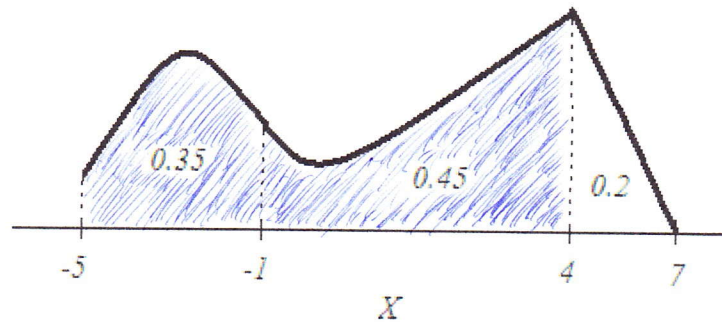
Date: 3/11/2025

Quiz 9

1. (2 points) State the requirements for a density curve (for a continuous random variable).

- ① The curve must be on or above the x-axis
- ② The area under the entire curve must equal 1.

2. (3 points) Suppose X is a random variable with the density curve drawn below.



a) What are the possible values of X ?

All decimals between -5 and 7.

b) What is $P(X = 4)$?

$\boxed{0}$

c) What is $P(-7 \leq X \leq 4)$?

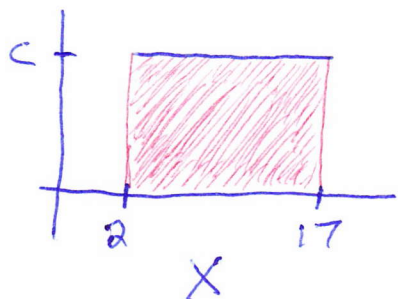
$$= P(-5 \leq x \leq 4)$$

$$= 0.35 + 0.45$$

$$= \boxed{0.8}$$

3. (2 points) Suppose X is uniformly distributed over the interval $[2, 17]$.

a) Find c that makes this a probability density.



Area under
entire curve = 1

$$b \cdot h = 1$$

$$15c = 1$$

$$\frac{15c}{15} = \frac{1}{15}$$

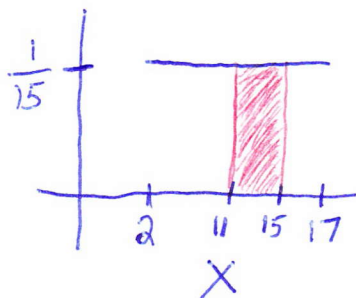
$$\Rightarrow \boxed{c = \frac{1}{15}}$$

b) Find $P(11 \leq X \leq 15)$

$$= b \cdot h$$

$$= 4 \cdot \frac{1}{15}$$

$$= \boxed{\frac{4}{15}}$$



4. (3 points) Suppose Z has a standard normal distribution.

a) What are the possible values for Z ?

All decimals

b) What is the mean μ of Z ?

$$\mu = 0$$

c) What is the standard deviation σ of Z ?

$$\sigma = 1$$