Name: Solutions

Date: 3/12/2025

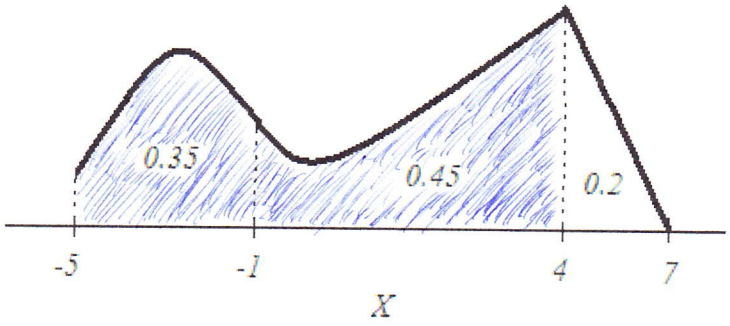
Math 130
Quiz 9

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 $P(-7 \le X \le 4)$?

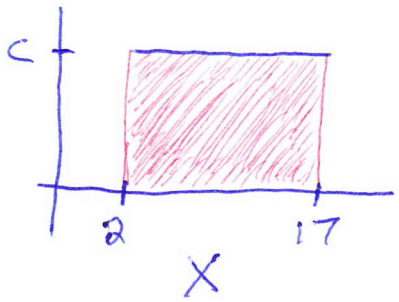
$= P(-5 \le x \le 4)$

$= 0.35 + 0.45$

$= \boxed{0.8}$

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 $= 1$

$b \cdot h = 1$

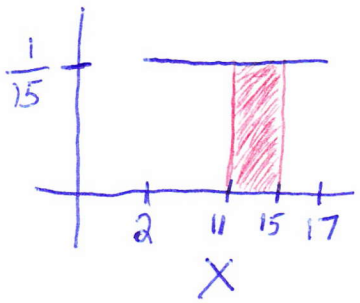
$15c = 1$

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

b) Find $P(11 \le X \le 15)$ $= b \cdot h$

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

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



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?

$\sigma = 1$