NORMAL CURVE

TEXT:

LAST NAME	FIRST NAME	DATE

IN EACH OF THE FOLLOWING QUESTIONS, MAKE A SKETCH OF THE NORMAL CURVE, AND SHADE THE AREA UNDER DISCUSSION.

1 (5 points)**.** Consider Z, the standard normal distribution.

(a) Find the area under the standard normal curve that lies to the right of the z-score 1.105

(b) Find the area under the standard normal curve that lies between z-scores $z_1 = -2.718$ and $z_2 = -2.222$

(c) Find the 77-th percentile of Z

(d) Find the z-scores that bound the middle 6% of the area under the standard normal curve.

$z_1 =$

$z_2 =$

2 (6 points)**.** The average monthly household income in Ukraine in 2016 is 5200 hryvnias (about $200) with the standard deviation of 900 hryvnias. Assume that the population is normally distributed.

(a) Describe the distribution of X, a random household income.

(b) Find the proportion of the household population with incomes below 4500 hryvnias.

(c) Find the proportion of the household population with incomes above 7000 hryvnias.

(d) Find the proportion of the household population with incomes between 5000 and 6000 hryvnias.

(e) Find the 13-th percentile of the household income.

(f) How much money does Olesya's household make if only 2% of all households make even more?

3 (6 points). Let $X \sim N(\mu = -6, \sigma = 2)$.

(a) Find $P(X \leq -5)$

(b) Find $P(X = -6)$

(c) Find $P(X > 0)$

(d) Find numbers x_1 and x_2 that bound the middle 99.9% of the area under the graph of pdf of X

$x_1 =$

$x_2 =$

(e) Find the number x such that 25% of values of X are greater than x

4 (2 points)**.** Let Y be the normal random variable with mean 21 and standard deviation 3. Create a relative frequency histogram with the following classes, and frequencies equal to the areas under the normal curve Y

class	frequency
$(10, 12)$	
$(12, 14)$	
$(14, 16)$	
$(16, 18)$	
$(18, 20)$	
$(20, 22)$	
$(22, 24)$	
$(24, 26)$	
$(26, 28)$	
$(28, 30)$	
$(30, 32)$