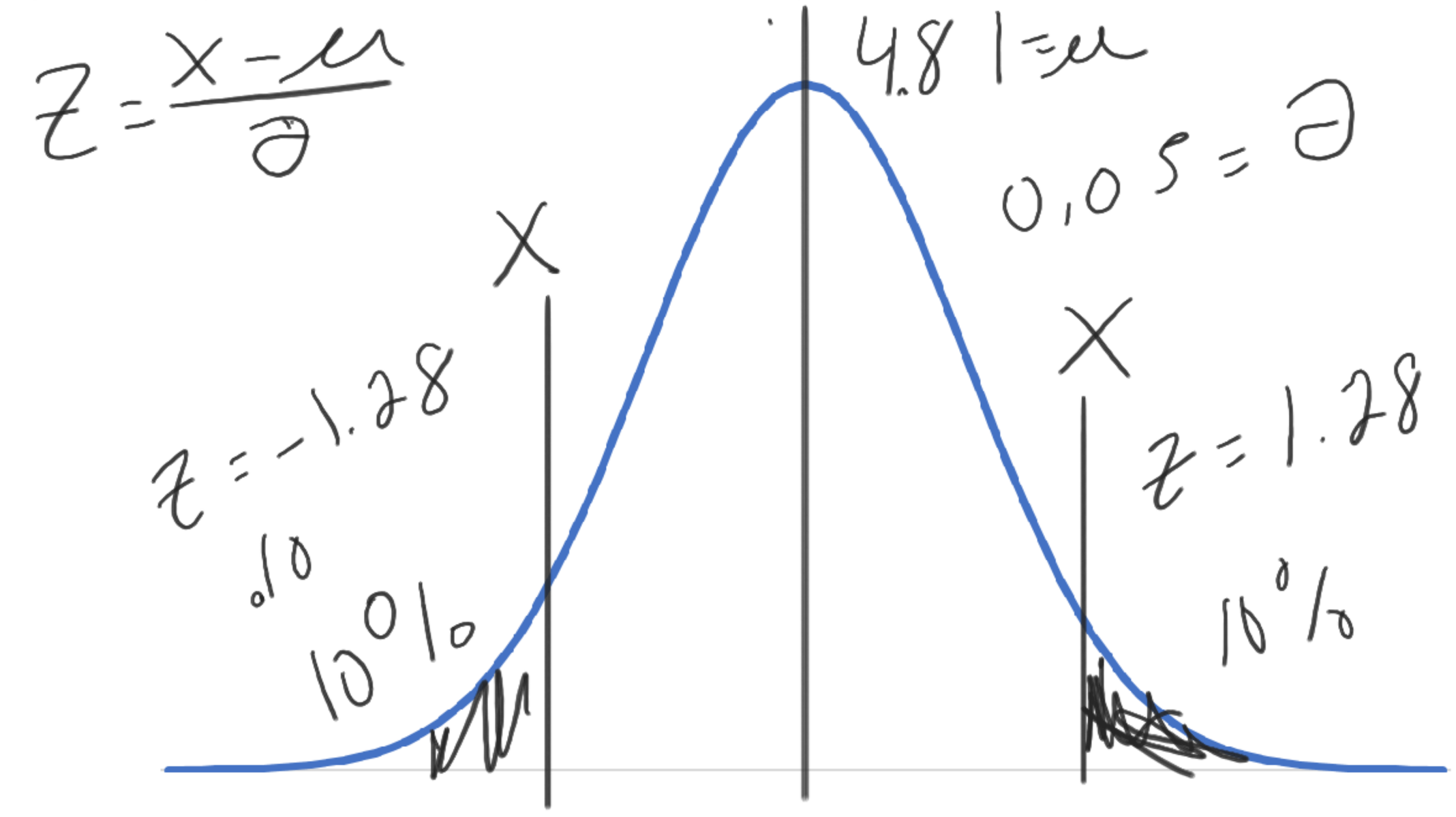
The lengths of nails produced in a factory are normally distributed with a mean of 4.81 centimeters and a standard deviation of 0.05 centimeters. Find the two lengths that separate the top $10\ \%$ and the bottom $10\ \%$. These lengths could serve as limits used to identify which nails should be rejected. Round your answer to the nearest hundredth, if necessary.



$$z = \frac{x - \mu}{\sigma}$$

$$0.05 \quad (-1.28) = \left(\frac{x - 4.81}{0.05}\right) \quad 0.05$$

$$-0.064 = x - 4.81$$

$$+4.81 \qquad +4.81$$

$$4.746 = x$$

$$1.28 = \frac{x - 4.81}{0.05}$$

$$0.064 = x - 4.81$$

$$4.874 = x$$

A newspaper company classifies its customers by gender and location of residence. The research department has gathered data from a random sample of 1870 customers. The data is summarized in the table below.

Gender and Residence of Customers		
Residence	**Males**	**Females**
Apartment	113	227
Dorm	129	254
With Parent(s)	52	165
Sorority/Fraternity House	166	219
Other	262	283

not male

not dorm

1741/1870

Copy Data

What is the probability that a customer is not male or does not live in a dorm? Express your answer as a fraction or a decimal number rounded to four decimal places.

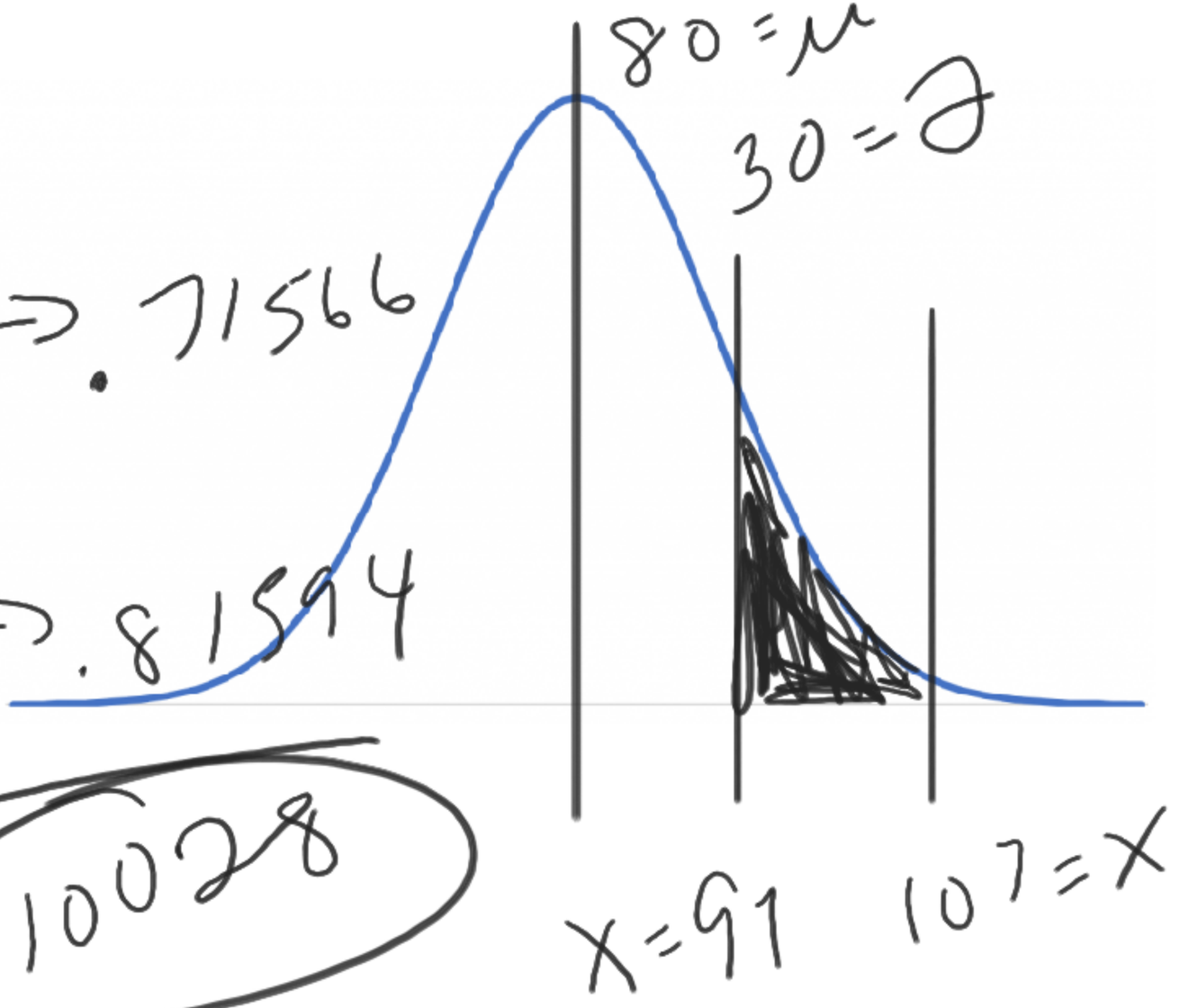
Trucks in a delivery fleet travel a mean of 80 miles per day with a standard deviation of 30 miles per day. The mileage per day is distributed normally. Find the probability that a truck drives between 97 and 107 miles in a day. Round your answer to four decimal places.

$$z = \frac{x - \mu}{\sigma}$$

$$z = \frac{97 - 80}{30} = 0.57 \Rightarrow .71566$$

$$z = \frac{107 - 80}{30} = 0.90 \Rightarrow .81594$$

$.10028$



x	-4	-3	-2	-1	0
$P(X = x)$	0.2	0.1	0.3	0.2	0.2

$$\mu = E(X) = \sum [x \cdot p(x)]$$

$-0.8 \quad -0.6 \quad 0$

$-0.3 \quad -0.2$

$E(x) = -1.9 = \mu$

x	-4	-3	-2	-1	0
$P(X = x)$	0.2	0.1	0.3	0.2	0.2

$$= V(X) = \sum \left[(x-\mu)^2 \, p(x) \right]$$

$-4-(-1.9) = (-2.1)^2 = 4.41\,(0.2) = 0.882$

$-3-(-1.9) = (-1.1)^2 = 1.21\,(0.1) = 0.121$

$-2-(-1.9) = (-0.1)^2 = 0.01\,(0.3) = 0.003$

$-1-(-1.9) = (0.9)^2 = 0.81\,(0.2) = 0.162$

$0-(-1.9) = (1.9)^2 = 3.61\,(0.2) = 0.722$

$V(x) = 1.917$

$S(x) = \sqrt{V(x)} = 1.38$

x	-4	-3	-2	-1	0
$P(X = x)$	0.2	0.1	0.3	0.2	0.2

$P(x > -1) = 0.2$

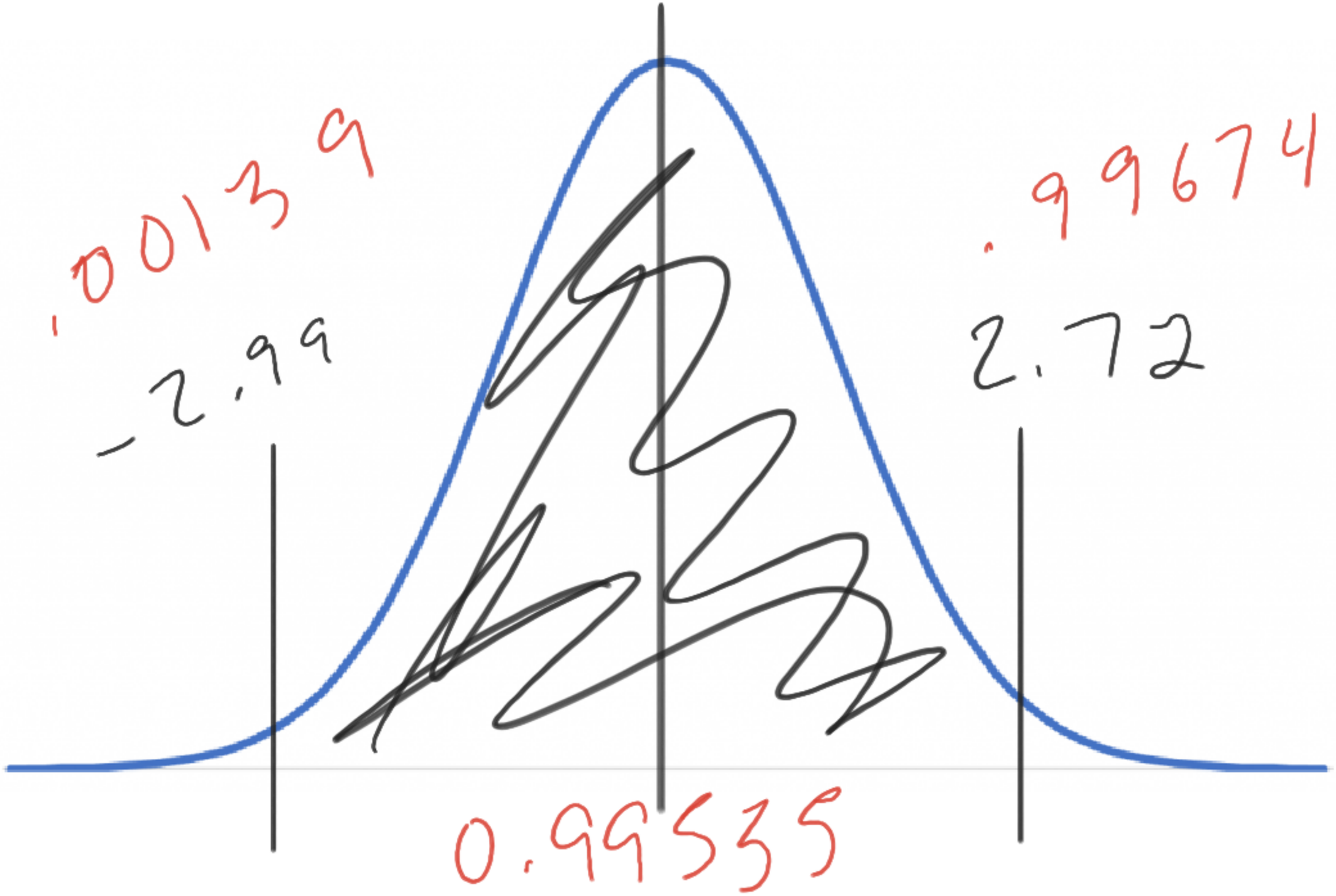
$P(x > -2) = 0.4$

There are 10 people in an office with 3 different phone lines. If all the lines begin to ring at once, how many groups of 3 people can answer these lines?

C → order doesn't

$10C_3 =$ P → order matters

Find the area under the standard normal curve between $z = -2.99$ and $z = 2.72$. Round your answer to four decimal places, if necessary.



A box contains 9 green marbles and 12 white marbles. If the first marble chosen was a green marble, what is the probability of choosing, without replacement, a white marble? Express your answer as a fraction or a decimal number rounded to four decimal places.

$$\frac{12}{20} \quad \frac{\text{want}}{\text{have}}$$

A researcher wishes to conduct a study of the color preferences of new car buyers. Suppose that $30\ \%$ of this population prefers the color brown. If 18 buyers are randomly selected, what is the probability that exactly 8 buyers would prefer brown? Round your answer to four decimal places.

$$nCr(p^r)(1-p)^{n-r}$$

$$n = 18$$

$$r = 8$$

$$p = 0.30$$

$$nCr(18,8)(.3)^{8}(1-.3)^{18-8}$$

$$.0811$$

$$18C_8$$