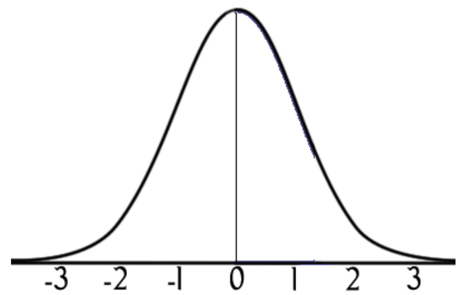
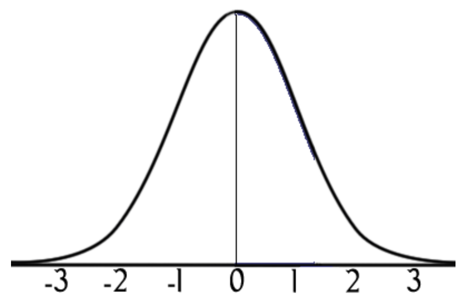
Math 1030 March 1, 2019 Homework 6

Using the normal distribution tables, find the area under the normal distribution curve for the following:
(Use the diagram to shade in the area you are looking up. This is to help.)

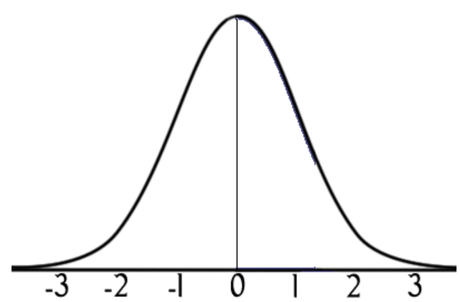
1) Between z = 0 and z = 2.13



2) Between z = -1.85 and z = 0

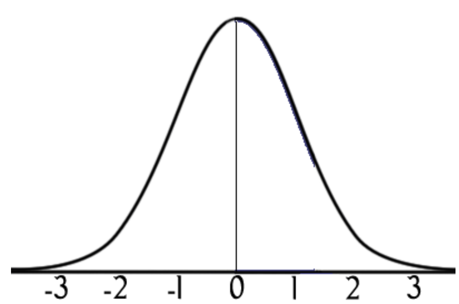


3) Between z = -1.23 and z = 2.56

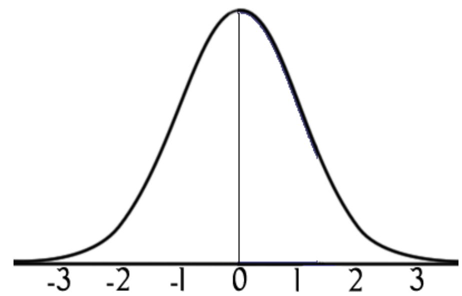


Find the probabilities for each using the normal distr.

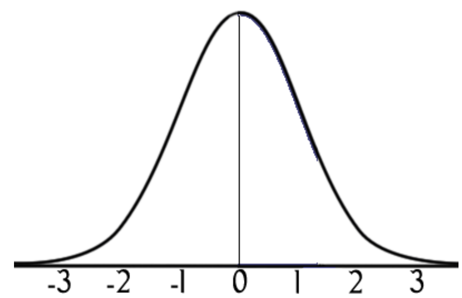
4) $P(0 < z < 1.12)$



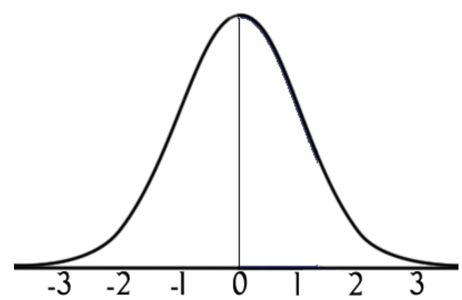
5) P(z < 1.56)



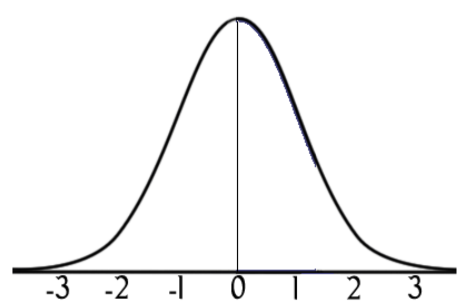
6) P(z > 2.43)



7) P(z<-2.3)

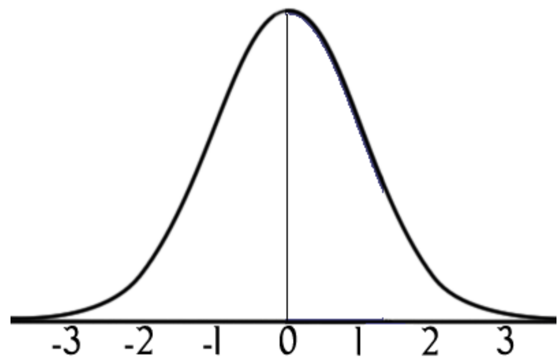


8) Find the z value to the right of the mean so that 67% of the area under the curve lies to the left of it.



9. The average salary of all US teachers is $47,750, and the standard deviation is $5680. Find these probabilities that a randomly selected teach earns:

a. between $35,000 and $45,000 per year

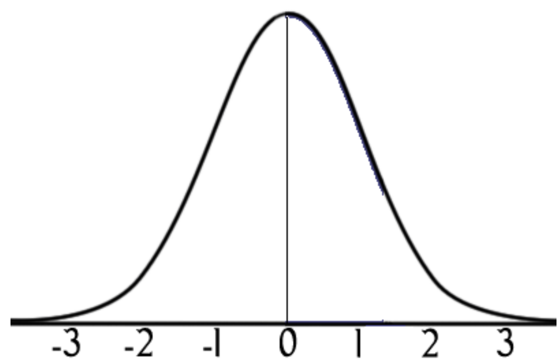


$$z_{left} = \frac{X_{low} - \mu}{\sigma} =$$

$$z_{right} = \frac{X_{high} - \mu}{\sigma} =$$

p(_____ < Z < ______)

b. more than $40,000 per year



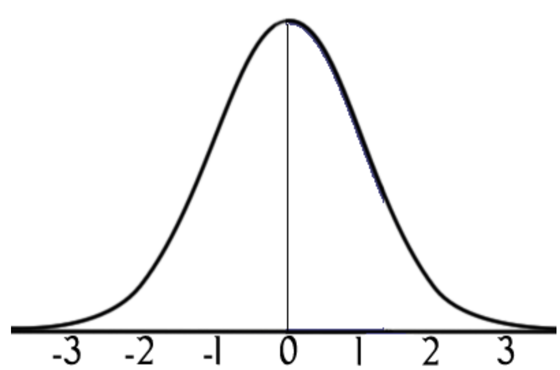
$$z = \frac{X - \mu}{\sigma} =$$

p(_______ < Z)

10. The average SAT score is 1028 with a standard deviation of 92. What is the probability that a radomly selected score exceeds 1200?

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

p(______ < Z)



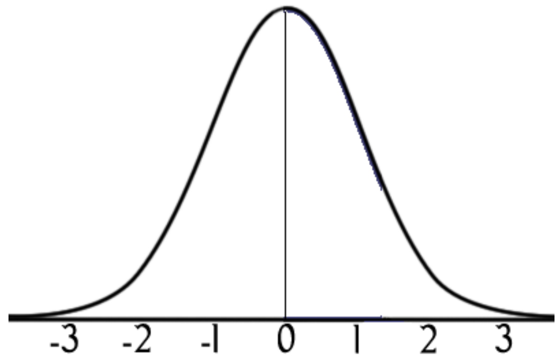
11. The average calories in a chocolate bar is 225 with a standard deviation of 10. Find the probability that a randomly selected chocolate bar will have

a. between 200 and 250 calories

$$z_{left} = \frac{X_{low} - \mu}{\sigma} =$$

$$z_{right} = \frac{X_{high} - \mu}{\sigma} =$$

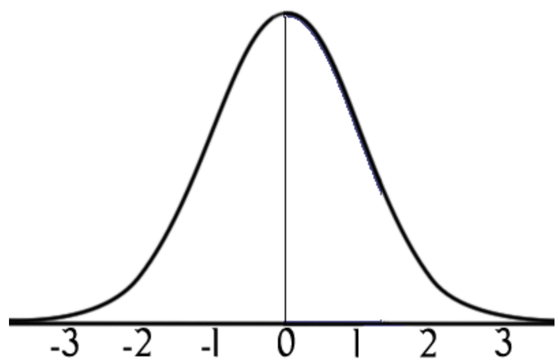
p(_____ < Z < ______)



b. less than 200 calories

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

p(Z < ________)

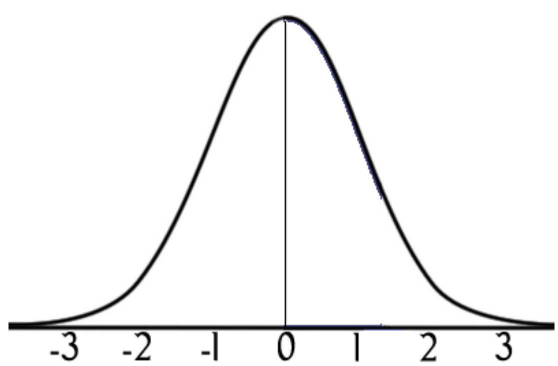


12. The average plumber makes $85,900 with a standard deviation of $11,000. Find the probability that a randomly selected pluber makes between $78,000 and $90,000 .

$$z_{left} = \frac{X_{low} - \mu}{\sigma} =$$

$$z_{right} = \frac{X_{high} - \mu}{\sigma} =$$

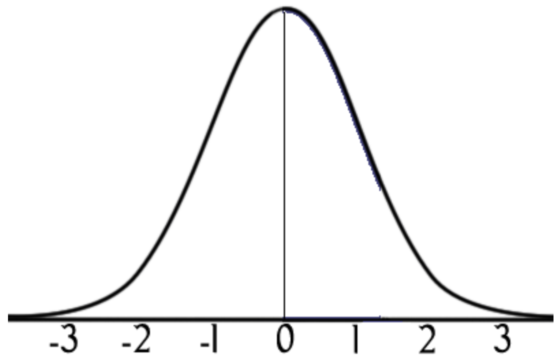
p(_____ < Z < ______)



13. The mean number of miles per year for a US vehicle is 12,494 miles with a standard deviation of 1290 miles. A vehicle is selected at random. Calculate these probabilities.

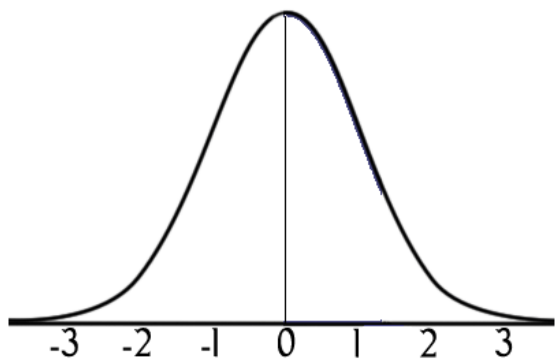
a. The car is driven less than 10,000 miles in a year.

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



b. The car is driven over 14,000 miles in a year.

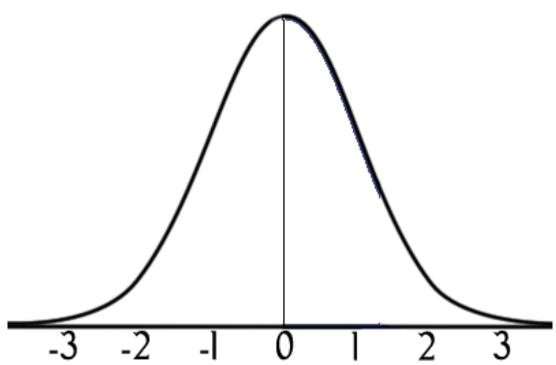
$$z = \frac{X - \mu}{\sigma} =$$



c. The car is driven between 12,000 and 13,000 miles in a year.

$$z_{left} = \frac{X_{low} - \mu}{\sigma} =$$

$$z_{right} = \frac{X_{high} - \mu}{\sigma} =$$



14. The average credit card debt for a college senior is $4960 with a standard deviation of $1230. What is the probability than a senior has more than $6000 of credit card debt?

15. Th average price of gasoline in 2017 was $2.37 per gallon with a standard deviation of 15 cents. What is the probability that the price of gas at the pump on a random day in 2017 was between $2.30 and $2.50 ?

16. A screening test has an average score of 64 and a standard deviation of 9. If only the top 20% of test scores receive an interview, what is the cutoff score?

$Z = \frac{X - \mu}{\sigma}$ Find z for .8 in the table, then solve for x: $X = \mu + Z\sigma$