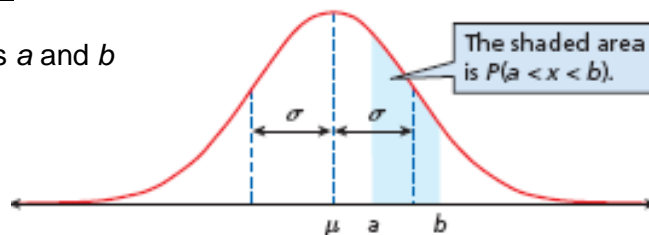


Algebra 2H Notes 8-7: Standard Normal Values

The area under the normal curve between two numbers a and b corresponds to the probability that x lies between those numbers. Because area under the curve represents probability, the total area under the curve is 1.

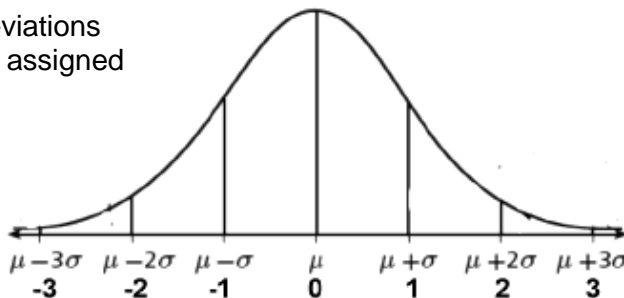


Finding a Standard Normal Value

A **z-score** corresponds to the number of standard deviations above or below the mean of the data. Therefore, 0 is assigned to the mean.

If a random variable x is normally distributed with mean μ and standard deviation σ , then the standard normal value of x is its z-score, found by using the formula:

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



The table shows the approximate area under the normal curve for all values less than z .

z	-2.5	-2	-1.5	-1	-0.5	0	0.5	1	1.5	2	2.5
Area	0.01	0.02	0.07	0.16	0.31	0.5	0.69	0.84	0.93	0.98	0.99

Example

Scores on a test are normally distributed with a mean of 75 and a standard deviation of 8. Estimate each probability.

1. A randomly selected student scored less than 87.
2. A randomly selected student scored more than 79.
3. A randomly selected student scored between 71 and 75.