Chapter 11 Section 1

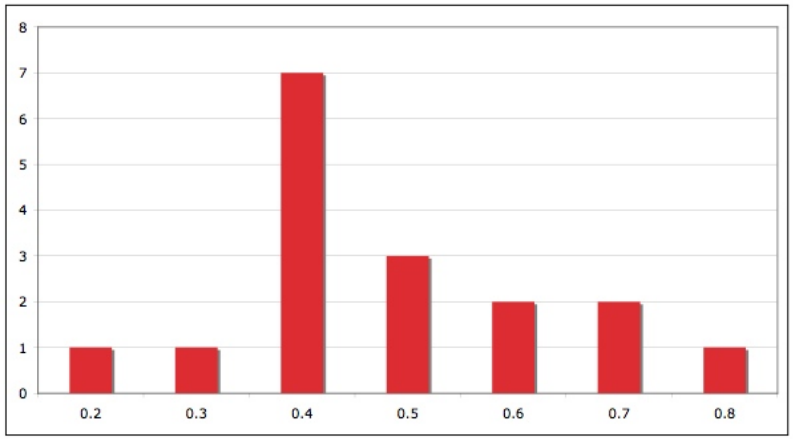
MA1020 Quantitative Literacy

Sidney Butler

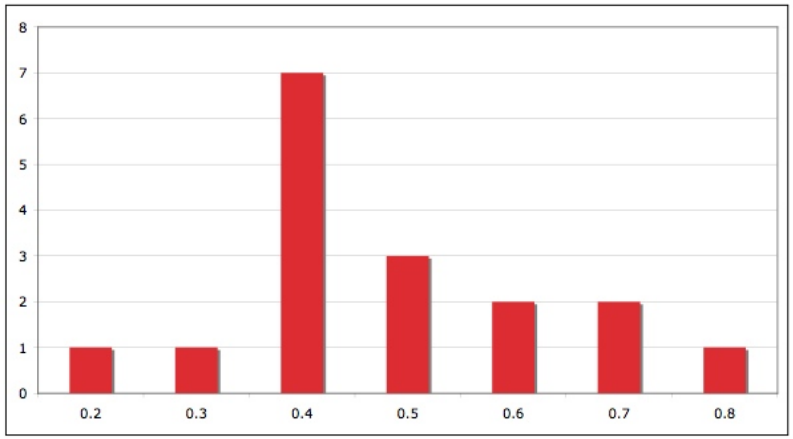
Michigan Technological University

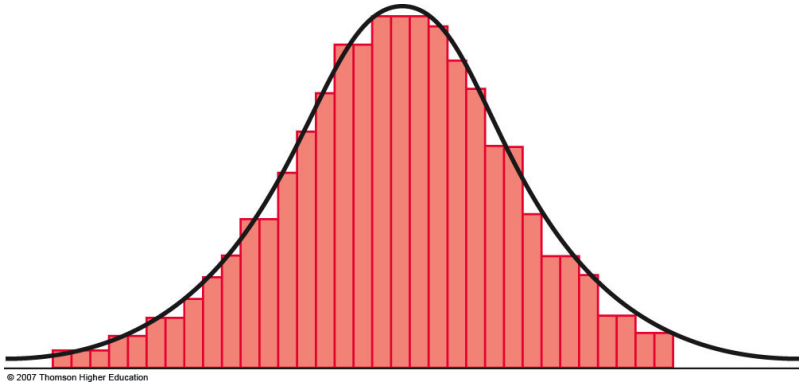
November 10, 2006

Distributions of Large Data Sets

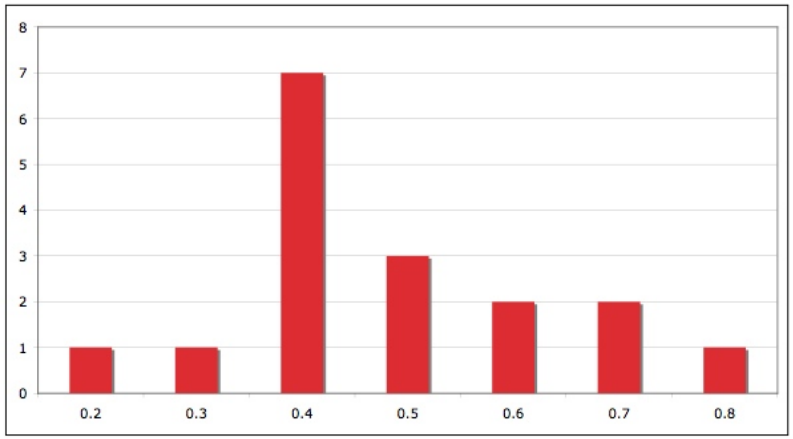


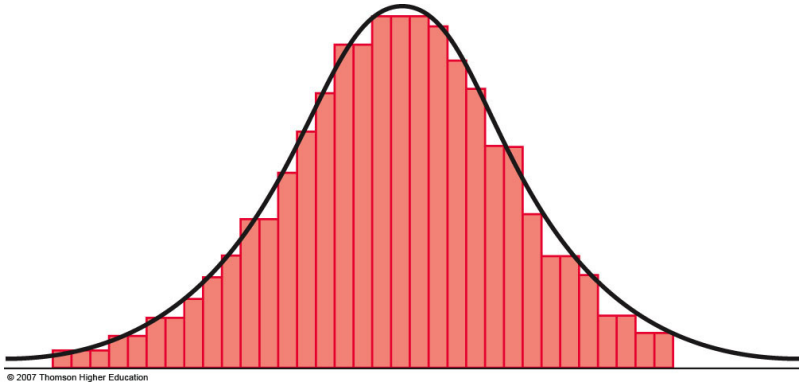
Distributions of Large Data Sets

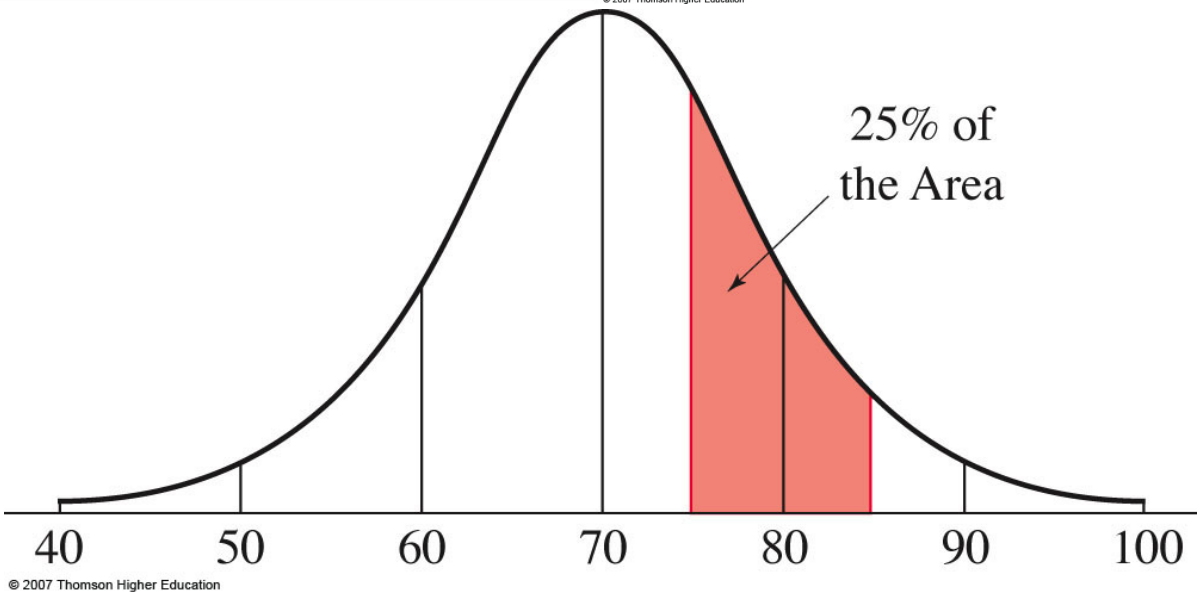




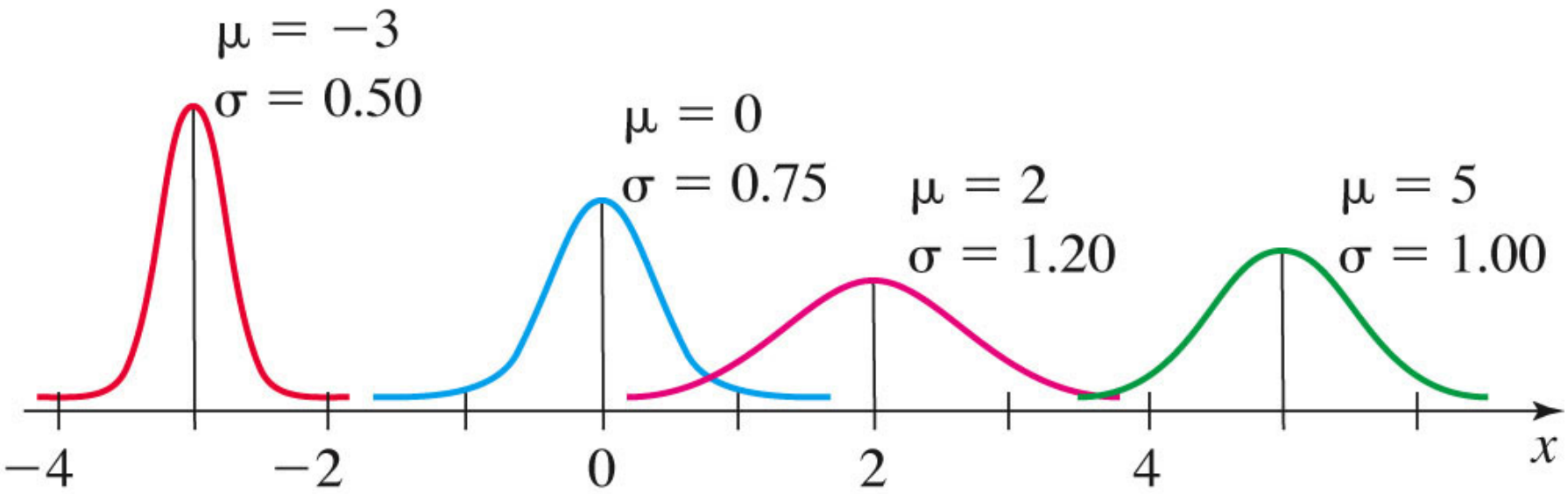
Distributions of Large Data Sets



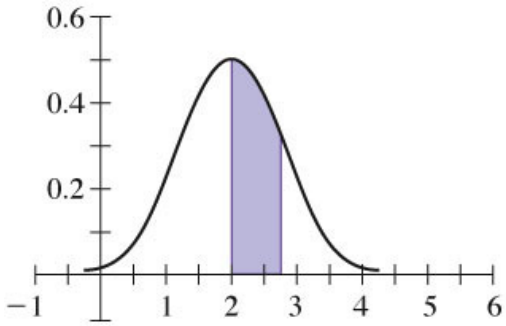




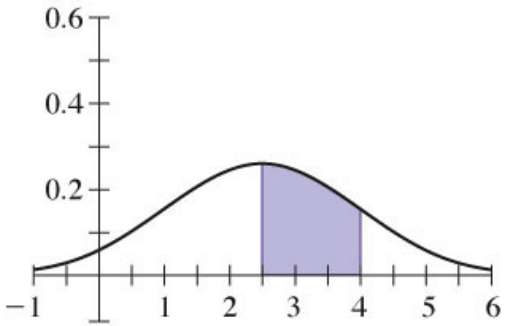
Mean and Standard Deviation



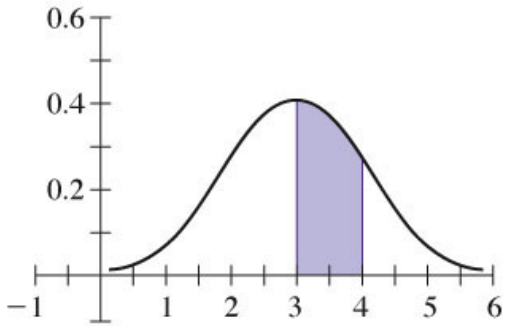
Standard Normal Distribution



(a) Normal Distribution with $\mu = 2$ and $\sigma = 0.8$ Shaded area ≈ 0.34
$\mu + \sigma = 2 + 0.8 = 2.8$



(b) Normal Distribution with $\mu = 2.5$ and $\sigma = 1.5$ Shaded area ≈ 0.34
$\mu + \sigma = 2.5 + 1.5 = 4$



(c) Normal Distribution with $\mu = 3$ and $\sigma = 1$ Shaded area ≈ 0.34
$\mu + \sigma = 3 + 1 = 4$

Definition

The normal distribution with a mean 0 ($\mu = 0$) and standard deviation 1 ($\sigma = 1$) is called the standard normal distribution.

Area

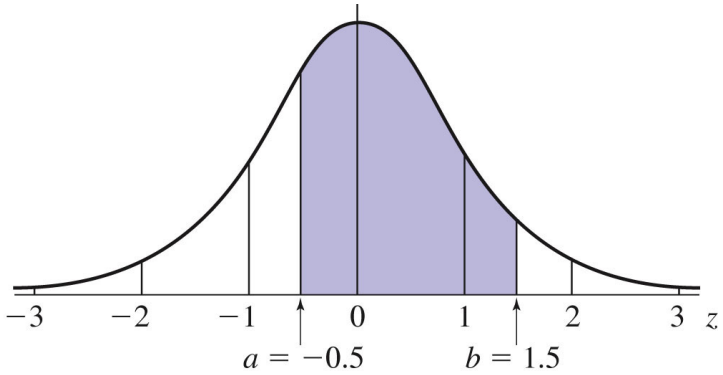


Table 11.1

AREA UNDER THE STANDARD NORMAL DISTRIBUTION CURVE BETWEEN a AND b

		b												
		3.0	2.5	2.0	1.5	1.0	0.5	0.0	−0.5	−1.0	−1.5	−2.0	−2.5	−3.0
a	−3.0	.9974	.9925	.9760	.9319	.8400	.6902	.4987	.3072	.1574	.0655	.0214	.0049	.0000
	−2.5	.9925	.9876	.9711	.9270	.8351	.6853	.4938	.3023	.1525	.0606	.0165	.0000	
	−2.0	.9760	.9711	.9546	.9105	.8186	.6688	.4773	.2858	.1360	.0441	.0000		
	−1.5	.9319	.9270	.9105	.8664	.7745	.6247	.4332	.2417	.0919	.0000			
	−1.0	.8400	.8351	.8186	.7745	.6826	.5328	.3413	.1498	.0000				
	−0.5	.6902	.6853	.6688	.6247	.5328	.3830	.1915	.0000					
	0.0	.4987	.4938	.4773	.4332	.3413	.1915	.0000						
	0.5	.3072	.3023	.2858	.2417	.1498	.0000							
	1.0	.1574	.1525	.1360	.0919	.0000								
	1.5	.0655	.0606	.0441	.0000									
	2.0	.0214	.0165	.0000										
	2.5	.0049	.0000											
	3.0	.0000												

Symmetry

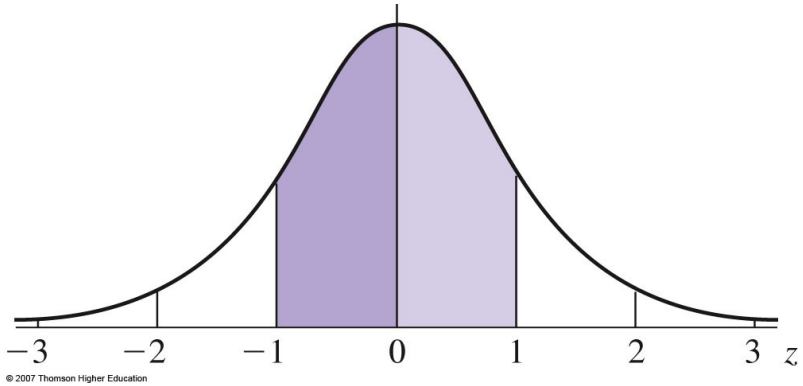


Table 11.2

EQUAL AREAS UNDER THE STANDARD NORMAL DISTRIBUTION CURVE

		b						
		3.0	2.5	2.0	1.5	1.0	0.5	0.0
a	−3.0	.9974	.9925	.9760	.9319	.8400	.6902	.4987
	−2.5	.9925	.9876	.9711	.9270	.8351	.6853	.4938
	−2.0	.9760	.9711	.9546	.9105	.8186	.6688	.4773
	−1.5	.9319	.9270	.9105	.8664	.7745	.6247	.4332
	−1.0	.8400	.8351	.8186	.7745	.6826	.5328	.3413
	−0.5	.6902	.6853	.6688	.6247	.5328	.3830	.1915
	0.0	.4987	.4938	.4773	.4332	.3413	.1915	.0000

Symmetry

Table 11.3

STANDARD NORMAL DISTRIBUTION AREAS					
z	Area Above Interval 0 to z	z	Area Above Interval 0 to z	z	Area Above Interval 0 to z
0.1	0.0398	1.1	0.3643	2.1	0.4821
0.2	0.0793	1.2	0.3849	2.2	0.4861
0.3	0.1179	1.3	0.4032	2.3	0.4893
0.4	0.1554	1.4	0.4192	2.4	0.4918
0.5	0.1915	1.5	0.4332	2.5	0.4938
0.6	0.2257	1.6	0.4452	2.6	0.4953
0.7	0.2580	1.7	0.4554	2.7	0.4965
0.8	0.2881	1.8	0.4641	2.8	.04974
0.9	0.3159	1.9	0.4713	2.9	0.4981
1.0	0.3413	2.0	0.4772	3.0	0.4987

Practice

#4, 12, 16, 20, 24, 28