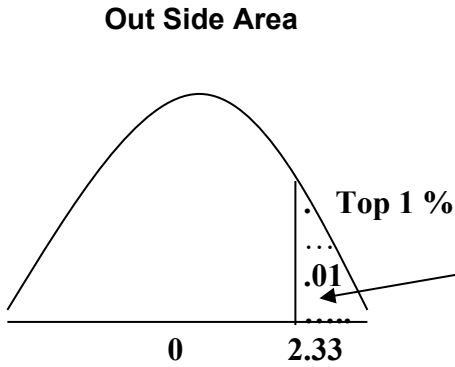


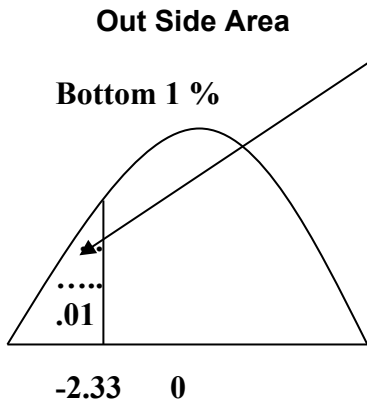
**TABLE 1**

Based on Standard Normal Distribution  $\mu = 0$  and  $\sigma = 1$

Important: If confidence level is not given use 95% as a default.



OR

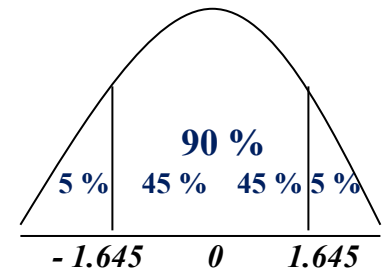


Confidence Level	Out Side Area On left or right Cut-off Point	Z - Value ( ± ) Critical Value = $Z_{\alpha/2}$
99%	.005	± 2.5758
98%	.01	± 2.3263
97%	.015	± 2.1701
96%	.02	± 2.0537
95%	.025	± 1.9600
94%	.03	± 1.8808
92%	.04	± 1.7507
90%	.05	± 1.6450
88%	.06	± 1.5548
86%	.07	± 1.4758
84%	.08	± 1.4051
82%	.09	± 1.3408
80%	.10	± 1.2816
78%	.11	± 1.2265
76%	.12	± 1.1750
70%	.15	± 1.0364
60%	.20	± 0.8416
50%	.25	± 0.6749
40%	.30	± 0.5244

How to find the Z -value for confidence intervals.

**Example: Find the Z - value for 90% confidence interval**

1. Divide 90% = 0.90 by 2,  $\Rightarrow .90 / 2 = 0.45$
2. Subtract 0.45 from 0.5  $\Rightarrow .5 - 0.45 = .05$
3. Look for area close to 0.05 from **inside** the table (page1).
- 4 **Find its corresponding Z-value (- 1.645)**



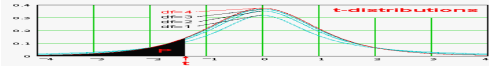
TI-83/84 2nd  $\rightarrow$  Distr  $\rightarrow$  Option 3 input (% , 0 , 1)

Example: 2nd  $\rightarrow$  Distr  $\rightarrow$  Option 3 input (.05 , 0 , 1) enter , then the answer will be - 1.645

Example: 2nd  $\rightarrow$  Distr  $\rightarrow$  Option 3 input (.95 , 0 , 1) enter , then the answer will be 1.645

Hint for TI % is the area to the left of the cut off point.

**TABLE 2**



Distribution for small sample  $n \leq 30$

t -

df = n-1	←----- alpha $\alpha$ ----->							
2-Tailed	0.40	0.30	0.20	0.10	0.05	0.02	0.01	0.005
1-Tailed	0.20	0.15	0.10	0.05	0.025	0.01	0.005	0.0025
Conf. Lev.	60%	70%	80%	90%	95%	98%	99%	99.5%
1	1.376	1.963	3.078	6.314	12.706	31.821	63.656	127.321
2	1.061	1.386	1.886	2.920	4.303	6.965	9.925	14.089
3	0.978	1.250	1.638	2.353	3.182	4.541	5.841	7.453
4	0.941	1.190	1.533	2.132	2.776	3.747	4.604	5.598
<b>5</b>	<b>0.920</b>	<b>1.156</b>	<b>1.476</b>	<b>2.015</b>	<b>2.571</b>	<b>3.365</b>	<b>4.032</b>	<b>4.773</b>
6	0.906	1.134	1.440	1.943	2.447	3.143	3.707	4.317
7	0.896	1.119	1.415	1.895	2.365	2.998	3.499	4.029
8	0.889	1.108	1.397	1.860	2.306	2.896	3.355	3.833
9	0.883	1.100	1.383	1.833	2.262	2.821	3.250	3.690
<b>10</b>	<b>0.879</b>	<b>1.093</b>	<b>1.372</b>	<b>1.812</b>	<b>2.228</b>	<b>2.764</b>	<b>3.169</b>	<b>3.581</b>
11	0.876	1.088	1.363	1.796	2.201	2.718	3.106	3.497
12	0.873	1.083	1.356	1.782	2.179	2.681	3.055	3.428
13	0.870	1.079	1.350	1.771	2.160	2.650	3.012	3.372
14	0.868	1.076	1.345	1.761	2.145	2.624	2.977	3.326
<b>15</b>	<b>0.866</b>	<b>1.074</b>	<b>1.341</b>	<b>1.753</b>	<b>2.131</b>	<b>2.602</b>	<b>2.947</b>	<b>3.286</b>
16	0.865	1.071	1.337	1.746	2.120	2.583	2.921	3.252
17	0.863	1.069	1.333	1.740	2.110	2.567	2.898	3.222
18	0.862	1.067	1.330	1.734	2.101	2.552	2.878	3.197
19	0.861	1.066	1.328	1.729	2.093	2.539	2.861	3.174
<b>20</b>	<b>0.860</b>	<b>1.064</b>	<b>1.325</b>	<b>1.725</b>	<b>2.086</b>	<b>2.528</b>	<b>2.845</b>	<b>3.153</b>
21	0.859	1.063	1.323	1.721	2.080	2.518	2.831	3.135
22	0.858	1.061	1.321	1.717	2.074	2.508	2.819	3.119
23	0.858	1.060	1.319	1.714	2.069	2.500	2.807	3.104
24	0.857	1.059	1.318	1.711	2.064	2.492	2.797	3.091
<b>25</b>	<b>0.856</b>	<b>1.058</b>	<b>1.316</b>	<b>1.708</b>	<b>2.060</b>	<b>2.485</b>	<b>2.787</b>	<b>3.078</b>
26	0.856	1.058	1.315	1.706	2.056	2.479	2.779	3.067
27	0.855	1.057	1.314	1.703	2.052	2.473	2.771	3.057
28	0.855	1.056	1.313	1.701	2.048	2.467	2.763	3.047
29	0.854	1.055	1.311	1.699	2.045	2.462	2.756	3.038
<b>30</b>	<b>0.854</b>	<b>1.055</b>	<b>1.310</b>	<b>1.697</b>	<b>2.042</b>	<b>2.457</b>	<b>2.750</b>	<b>3.030</b>
<b>n&gt;30 ⇒ Z</b>	<b>0.842</b>	<b>1.036</b>	<b>1.282</b>	<b>1.645</b>	<b>1.96</b>	<b>2.326</b>	<b>2.576</b>	<b>2.807</b>
Z-T	0.40	0.30	0.20	0.10	0.05	0.02	0.01	0.005
I-T	0.20	0.15	0.10	0.05	0.025	0.01	0.005	0.0025
Conf. Lev.	60%	70%	80%	90%	95%	98%	99%	99.5%

for  $n > 30$   
Use Bottom row