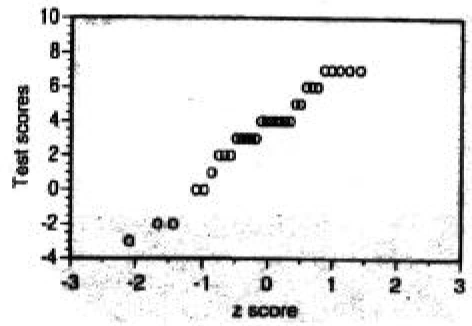
H.W. 9

7.4 **(a)** df = 29. **(b)** $1.055 < 1.12 < 1.311$; these have right-tail probabilities 0.15 and 0.10 (respectively). **(d)** $0.20 < P < 0.30$. **(e)** It is not significant at either level. **(f)** $P = 0.272$.

7.17 **(a)** Methods of displaying will vary. Below is a stemplot where the digits are the stems, and all leaves are "0"—this is essentially the same as a histogram. The scores are slightly left-skewed. The normal quantile plot looks reasonably straight, except for the granularity of the data. **(b)** $\bar{x} = 3.618$, $s = 3.055$, $SE_{\bar{x}} = 0.524$. **(c)** Using df = 30, we have $t^* = 2.042$ and the interval is 2.548 to 4.688. Minitab reports 2.551 to 4.684.

```
-3 | 0
-2 | 00
-1 | 0
-0 | 0
 0 | 0
 1 | 0
 2 | 000
 3 | 00000
 4 | 0000000
 5 | 00
 6 | 000
 7 | 00000
 8 |
 9 | 00
```



7.18 Test $H_0: \mu = 0$ vs. $H_a: \mu > 0$, where μ is the mean improvement in scores. $t = (\bar{x} - \mu)/SE_{\bar{x}} = 3.618/0.524 \doteq 6.90$, which has $P < 0.0005$; we conclude that scores are higher. The confidence interval from Exercise 7.17 tells us that the mean improvement is about 2.5 to 4.7 points.

Output from Minitab:

Test of mu = 0.000 vs mu > 0.000

Variable	N	Mean	StDev	SE Mean	T	P-Value
Scores	34	3.618	3.055	0.524	6.90	0.0000