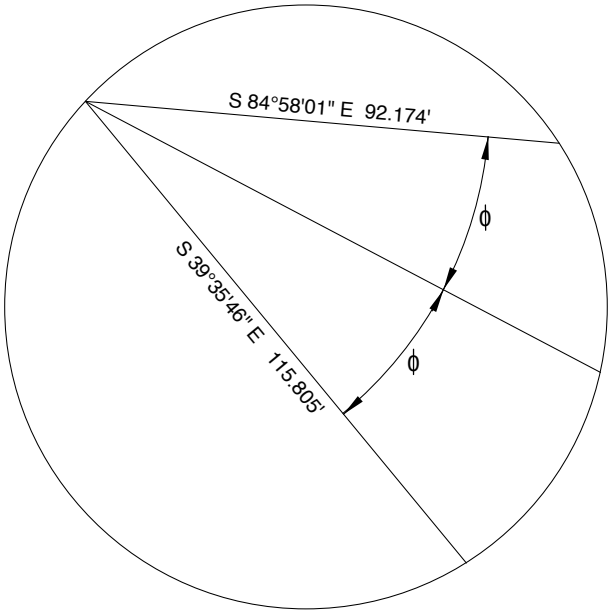
## Problem 168

*by Dave Lindell, L.S.*




How long is the middle chord if it is on the bisector of the other two?

## Problem 169

*by Benjamin Bloch, Ph.D.*

Using the Minimum SDQ Exponential Table show that each of the following results are incorrect.

a) $2^{15}$ =? 32,868

b) $16^{7}$ =? 268,335,456

c) $8^{23}$ =? 590,295,810,358,305,651,712

d) $147^{28}$ =? 4,840,445,926,998,527,143,180,132,566,802,461, 408,607,116,960,093,883,732,904,561

**Rule:** To use the table to calculate the SDQ($x^n$) take SDQ(x), then find R = Remainder of (n-2)/6 and locate the cell with the (SDQ(x), R) answer on the table.

**Example:** To find the SDQ($25^{14}$). Here x = 25 and n = 14. SDQ(25) => 7, and (n-2)/6 = (14 -– 2)/6 = 2 remainder R = 0. Looking at the table we see that row 7, column 0 has the value 4. SDQ($25^{14}$) = 4. Thus, $25^{14}$ = 37,252,902,984,619,140,625 => 85 => 13 => 4.

**MINIMUM SDQ EXPONENTIAL TABLE**

| n | 0 | 1 | | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
| | | | R= | 0 | 1 | 2 | 3 | 4 | 5 |
| SDQ(x) | | | | | | | | | |
| 1 | 1 | 1 | | 1 | 1 | 1 | 1 | 1 | 1 |
| 2 | 1 | 2 | | 4 | 8 | 7 | 5 | 1 | 2 |
| 3 | 1 | 3 | | 9 | 9 | 9 | 9 | 9 | 9 |
| 4 | 1 | 4 | | 7 | 1 | 4 | 7 | 1 | 4 |
| 5 | 1 | 5 | | 7 | 8 | 4 | 2 | 1 | 5 |
| 6 | 1 | 6 | | 9 | 9 | 9 | 9 | 9 | 9 |
| 7 | 1 | 7 | | 4 | 1 | 7 | 4 | 1 | 7 |
| 8 | 1 | 8 | | 1 | 8 | 1 | 8 | 1 | 8 |
| 9 | 1 | 9 | | 9 | 9 | 9 | 9 | 9 | 9 |

Solutions are on our website at *www.profsurv.com*