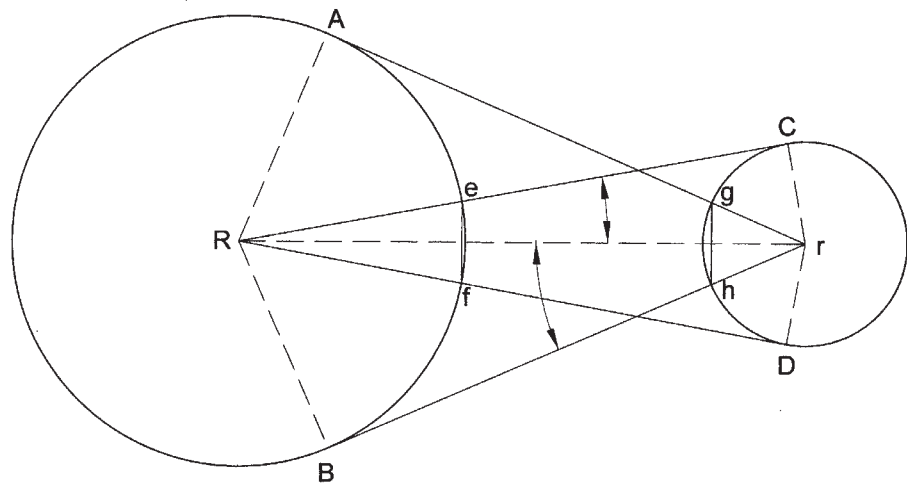


problem corner solution

Solution to
Problem
138

by Dave Lindell, L.S.



Connect radius points to tangent points A, B, C and D.

Draw line R-r connecting radius points.

Angle C-R-r = angle D-R-r = $\arcsin 93.22/514.590 = 10^\circ 26' 13''$

Angle R-r-B = angle R-r-A = $\arcsin 205.80/514.59 = 23^\circ 34' 26''$

$e-f = (2)(205.80) \sin 10^\circ 26' 13'' = 74.563'$

$g-h = (2)(93.22) \sin 23^\circ 34' 26'' = 74.563'$

(They will ALWAYS be equal whatever the radii or distance between centers.)

Solution to
Problem
139

by Benjamin Bloch, Ph.D.

a) $23 \Rightarrow 5$, $186 \Rightarrow 15 \Rightarrow 6$, and $5 \times 6 = 30 \Rightarrow 3$, thus if the answer does not have an SDQ of 3 it is *incorrect*.

Since $? 4,378 \Rightarrow 22 \Rightarrow 4$, and not 3, it must be *incorrect*. The correct result is $4,278 \Rightarrow 21 \Rightarrow 3$ agreeing with the SDQ operation.

b) $47 \Rightarrow 11 \Rightarrow 2$, $392 \Rightarrow 14 \Rightarrow 5$, $11,553 \Rightarrow 15 \Rightarrow 6$ and $135,678 \Rightarrow 30 \Rightarrow 3$. Since $2 \times 5 \times 6 \times 3 = 180 \Rightarrow 9$, if the answer does not have an SDQ of 9 it is *incorrect*. Since $? 28,879,297,696,016 \Rightarrow 80 \Rightarrow 8$, it must be *incorrect*. The correct result is $28,879,397,696,016 \Rightarrow 81 \Rightarrow 9$ agreeing with the SDQ operation result.

c) $3.14159 \Rightarrow 23 \Rightarrow 5$, $0.0687442 \Rightarrow 31 \Rightarrow 4$, Since $5 \times 4 = 20 \Rightarrow 2$, if the answer does not have an SDQ of 2 it is *incorrect*. Since $? 0.215976091278 \Rightarrow 57 \Rightarrow 12 \Rightarrow 3$, it must be *incorrect*. The correct result is $0.215966091278 \Rightarrow 56 \Rightarrow 11 \Rightarrow 2$ agreeing with the SDQ operation result.

d) $(5,387 \Rightarrow 23 \Rightarrow 5)$, and $(19.0045 \Rightarrow 19 \Rightarrow 10 \Rightarrow 1)$ so that the first parenthesis has an SDQ of $(5 \times 1) = 5$.

$(0.001866 \Rightarrow 21 \Rightarrow 3)$ and $(101.468 \Rightarrow 20 \Rightarrow 2)$ so that the second parenthesis has an SDQ of $(3 \times 2) = 6$.

Thus we now have $(5) + (6) = 11 \Rightarrow 2$, and the final correct result must have an SDQ of 2.

Since $? 102,477.430839288 \Rightarrow 66 \Rightarrow 12 \Rightarrow 3$, it must be *incorrect*. The correct result is $102,377.430839288 \Rightarrow 65 \Rightarrow 11 \Rightarrow 2$ agreeing with the SDQ operation result.