

## Clockwise Ride on Campus Side

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Helen cycled along the Ring Road at the University of Victoria starting from its intersection with McGill Road. At some points  $A$ ,  $B$ , and  $C$  during the ride, the magnitudes of displacement were  $a$ ,  $b$ , and  $c$ .



If  $d$  is diameter of circular path, and  $BC = CA$  show that

$$2c = \sqrt{(d+a)(d+b)} \pm \sqrt{(d-a)(d-b)}$$

Determine when this relationship<sup>1</sup> requires the sum of radicals and when it requires their difference. Let the bearings of  $A$ ,  $B$ , and  $C$  from the starting point be  $\alpha$ ,  $\beta$ , and  $\gamma$  degrees respectively. Find the relationship between  $\alpha$ ,  $\beta$ , and  $\gamma$ .

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<sup>1</sup> <http://mathcentral.uregina.ca/RR/database/RR.09.10/akulov2.html>