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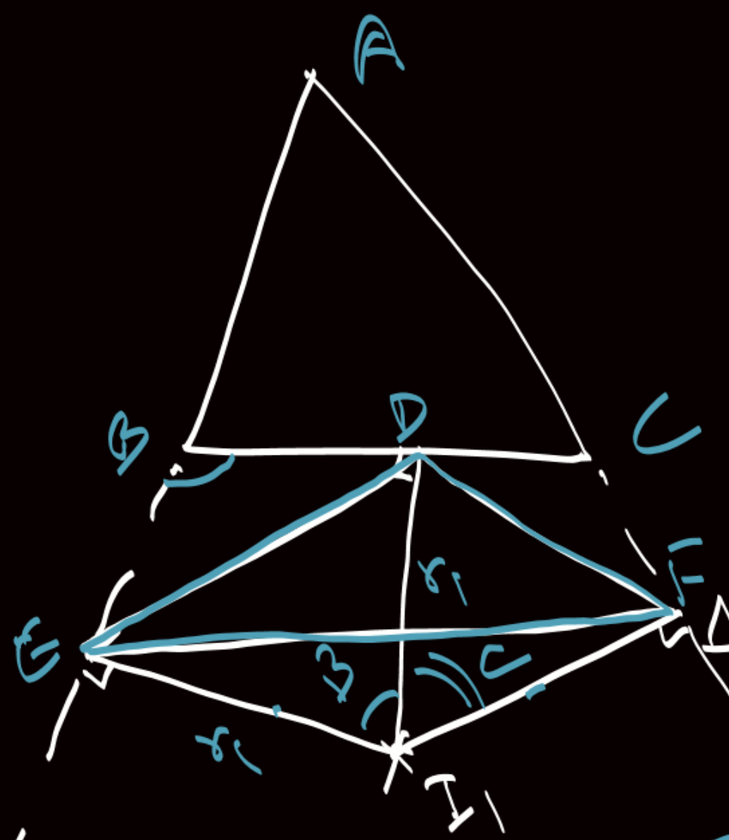

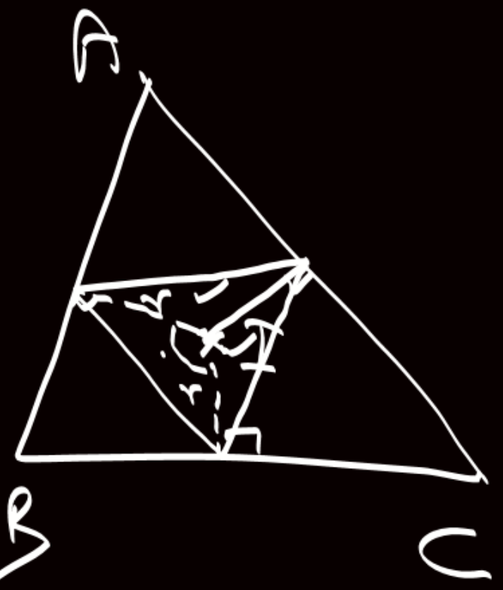

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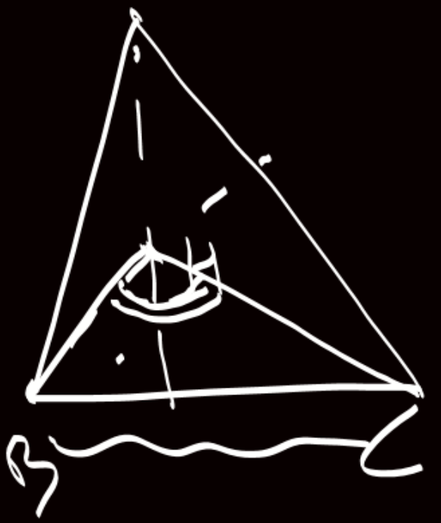

$$\Delta_0 = \frac{1}{2} r^2 (\sin B + \sin C + \sin A)$$

$$rs = \Delta$$

$$\frac{1}{2} r_1^2 (\sin B + \sin C - \sin A) = I_1ED + I_1FD - I_1EF$$

$$= \frac{r_1^2}{4R}(b + c - a) = \frac{r_1^2}{4R}(2s - 2a) = \frac{r_1}{2R}\Delta$$

$$\frac{r^2}{4R}(b + c + a) = \frac{r^2 s}{2R} = \frac{\Delta r}{2R}$$

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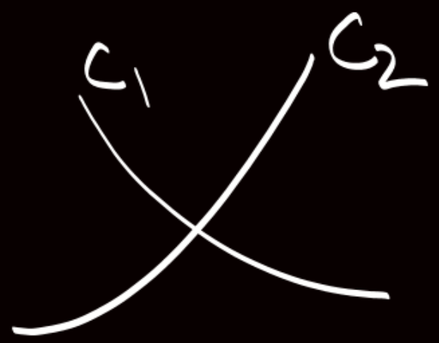

Angle between curves

= Angle b/n their tangents at point of intersection.

OR

Angle b/n normals to them at intersection point.

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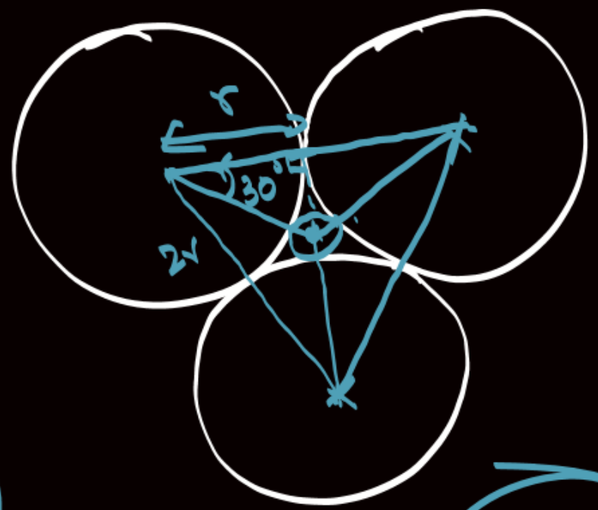

$$1 = \frac{2}{\sin 60^\circ}\left(\frac{r+r'}{2}\right)$$

$$r+r' = \frac{r}{\cos 30^\circ}$$

$$r' = \left(\frac{2}{\sqrt{3}} - 1\right) r$$

$$r' - r = \frac{2}{\sqrt{3}} r$$

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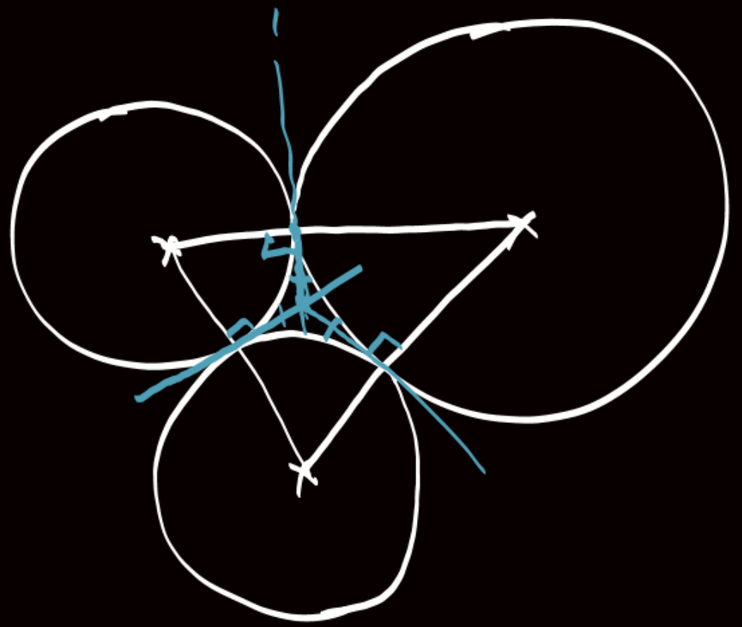

$r = ?$