Cosine Rule:
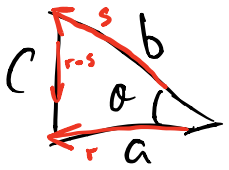

$$C^2 = a^2 + b^2 - 2ab\cos\theta$$

① $|r-s|^2 = |r|^2 + |s|^2 - 2|r||s|\cos\theta$

② $(r-s)\cdot(r-s) = r\cdot r - s\cdot r - s\cdot r - s\cdot(-s)$

$$= |r|^2 - 2s\cdot r + |s|^2$$

① = ②

$|r|^2 + |s|^2 - 2|r||s|\cos\theta = |r|^2 - 2s\cdot r + |s|^2$

$|r||s|\cos\theta = s\cdot r$

Dot product is telling us how much of

Vector A is going in the same direction as

Vector B.

⊢ Say for instance $\theta = 90°$

$$\cos 90° = 0$$

$$s\cdot r = 0$$

↙ No part of each vector is going
in same direction.

⊢ $\theta = 0°$

$$\cos 0° = 1$$

$s\cdot r = |r||s|$ Both of them are fully
↙ in the same direction.