

You will need these relations:

(1)

$$\cot(x) = \frac{\cos(x)}{\sin(x)}$$

(2)

$$\cos(a + b) \cdot \cos(a - b) = 1/2 (\cos(2b) + \cos(2a))$$

$$(\sin(x) \cdot \sin(y) = 1/2 (\cos(2b) - \cos(2a)))$$

which come from

$$\cos(x) \cdot \cos(y) = 1/2 (\cos(x - y) + \cos(x + y))$$

$$\sin(x) \cdot \sin(y) = 1/2 (\cos(x - y) - \cos(x + y))$$

(3)

$$\cos(2x) = 1 - 2 \cdot \sin^2(x)$$

(4)

$$1 - \sin^2(x) = \cos^2(x)$$

Now we have

$$\cot(a+b) \cdot \cot(a-b) = (1) = \frac{\cos(a+b) \cdot \cos(a-b)}{\sin(a+b) \cdot \sin(a-b)} = (2) = \frac{\cos(2b) + \cos(2a)}{\cos(2b) - \cos(2a)} =$$

$$= (3) = \frac{1 - 2 \cdot \sin^2(b) + 1 - 2 \sin^2(a)}{1 - 2 \sin^2(b) - 1 + 2 \sin^2(a)} = \frac{(1 - \sin^2(b)) - \sin^2(a)}{\sin^2(a) - \sin^2(b)} = (4) = \frac{\cos^2(b) - \sin^2(a)}{\sin^2(a) - \sin^2(b)}$$