PHY 711 – Problem Set # 20

Use contour integration techniques to show that for $b > a$

$$\int_0^{2\pi} \frac{\cos(2\theta)d\theta}{a^2 + b^2 - 2ab\cos(\theta)} = \frac{2\pi a^2}{b^2(b^2 - a^2)}. \tag{1}$$