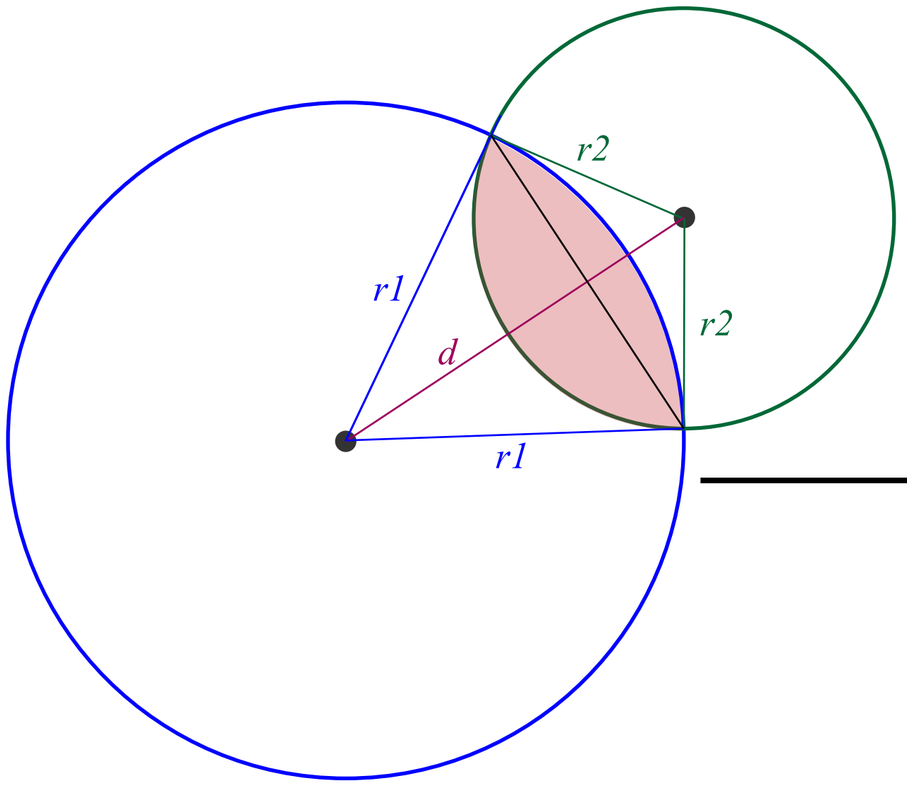
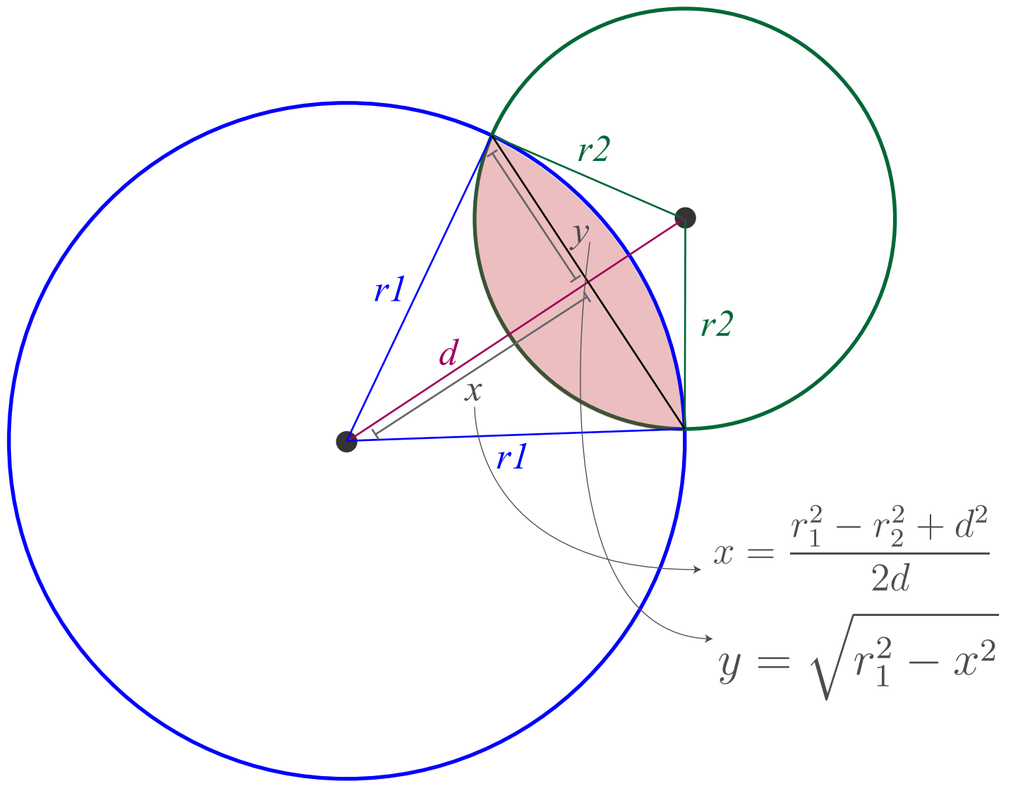
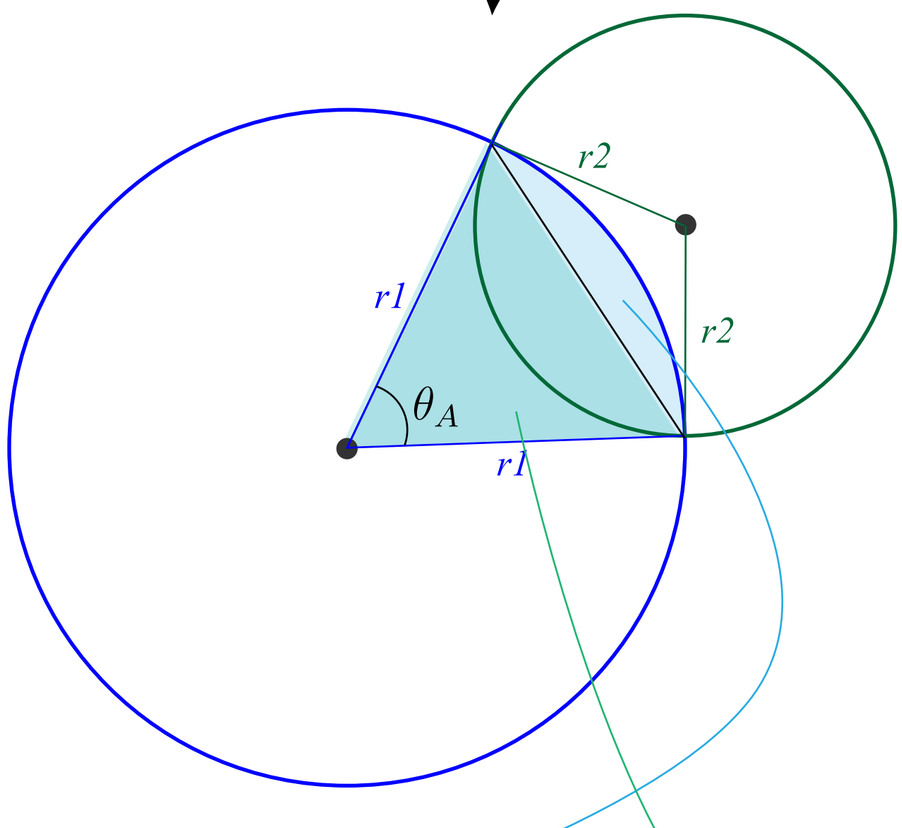
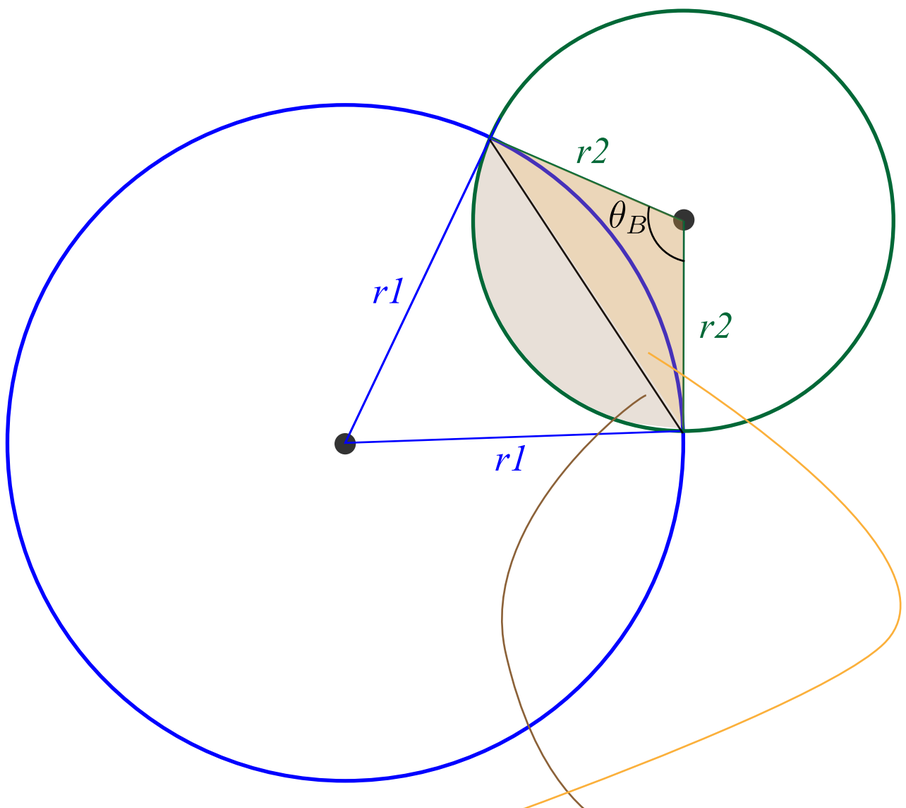
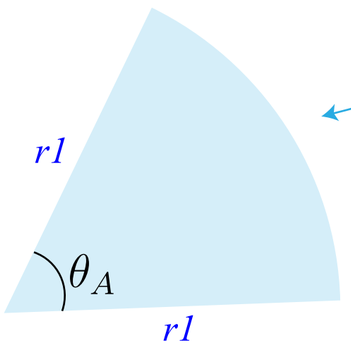




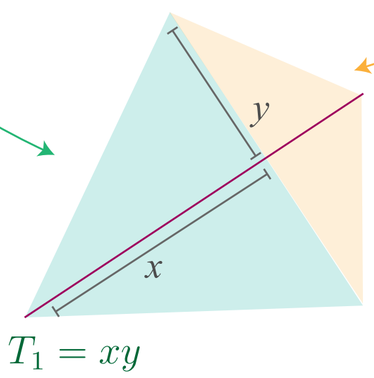






$$S_A = \frac{1}{2} r_1^2 \theta_A$$

$$\frac{\theta_A}{2} = \arcsin \frac{y}{r_1}$$



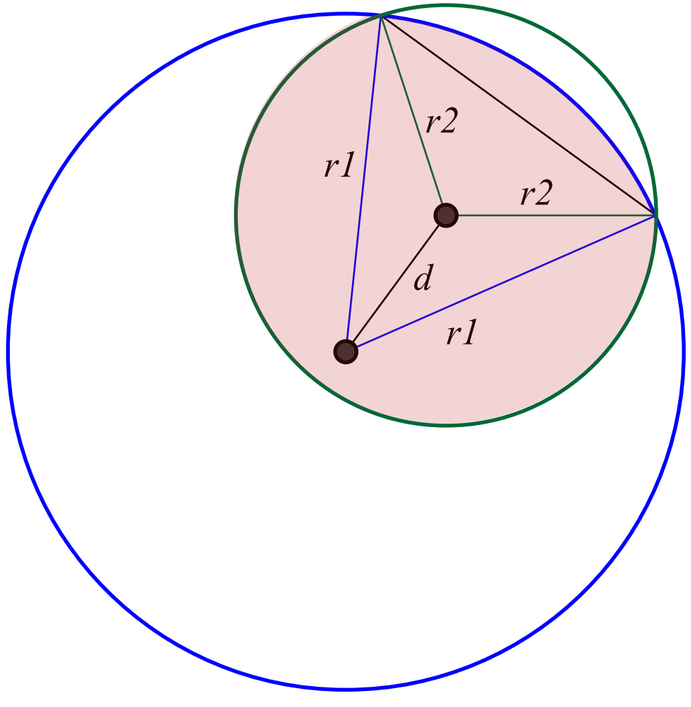
$T_2 = (d - x)y$

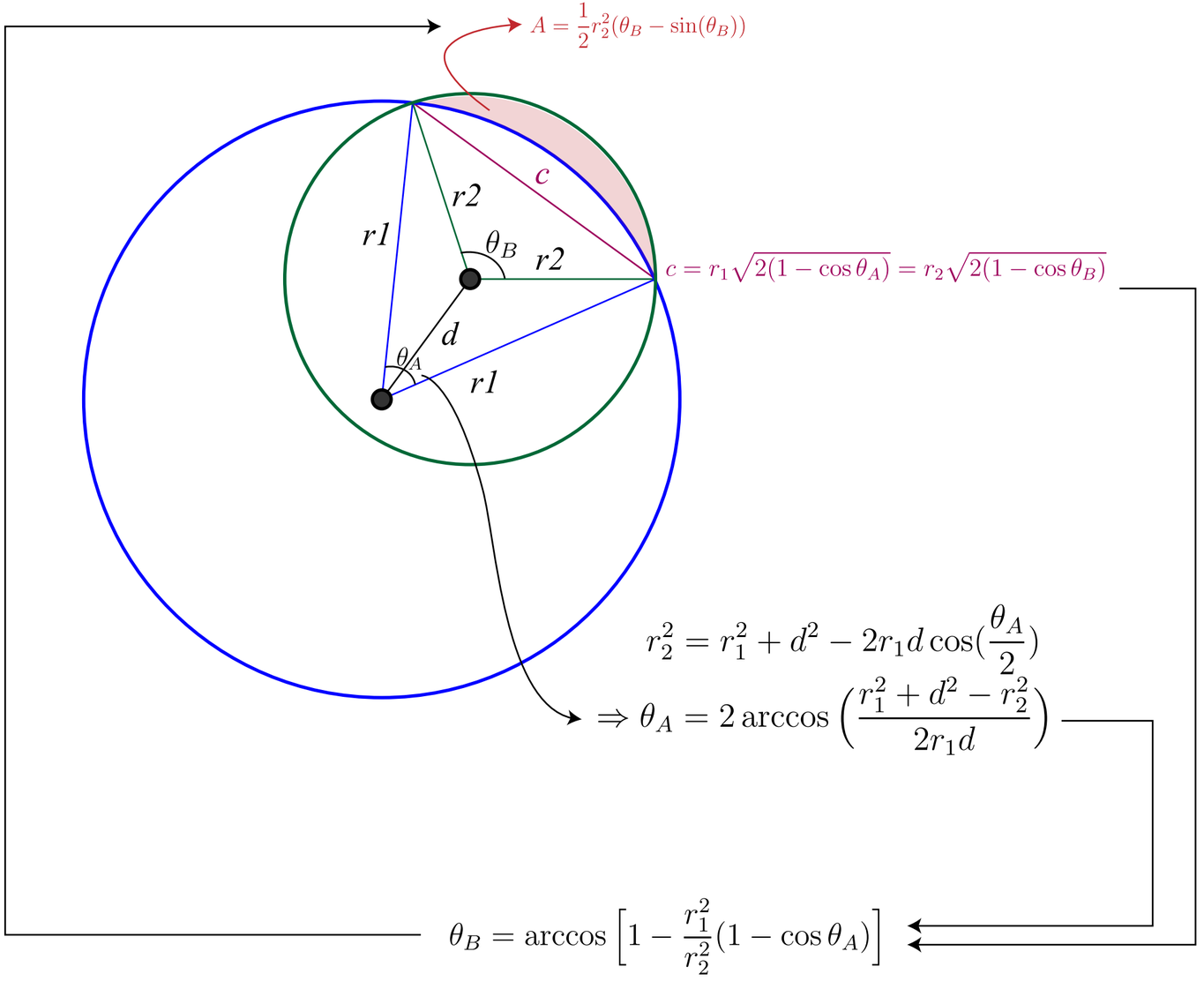
$T_1 = xy$

$$S_B = \frac{1}{2} r_2^2 \theta_B$$

$$\frac{\theta_B}{2} = \arcsin \frac{y}{r_2}$$

$$A_{intersection} = \underbrace{r_1^2 \arcsin \frac{y}{r_1}}_{S_A} + \underbrace{r_2^2 \arcsin \frac{y}{r_2}}_{S_B} - \underbrace{xy}_{T_1} - \underbrace{y(d-x)}_{T2}$$


r2
r1
r2
d
r1


$A = \frac{1}{2} r_2^2 (\theta_B - \sin(\theta_B))$
c
r2
r1
θ_B
r2
$c = r_1\sqrt{2(1-\cos\theta_A)} = r_2\sqrt{2(1-\cos\theta_B)}$
d
θ_A
r1
$r_2^2 = r_1^2 + d^2 - 2r_1 d\cos(\frac{\theta_A}{2})$
$\Rightarrow \theta_A = 2\arccos\left(\frac{r_1^2 + d^2 - r_2^2}{2r_1 d}\right)$
$\theta_B = \arccos\left[1 - \frac{r_1^2}{r_2^2}(1-\cos\theta_A)\right]$