

Fasci di circonferenze:

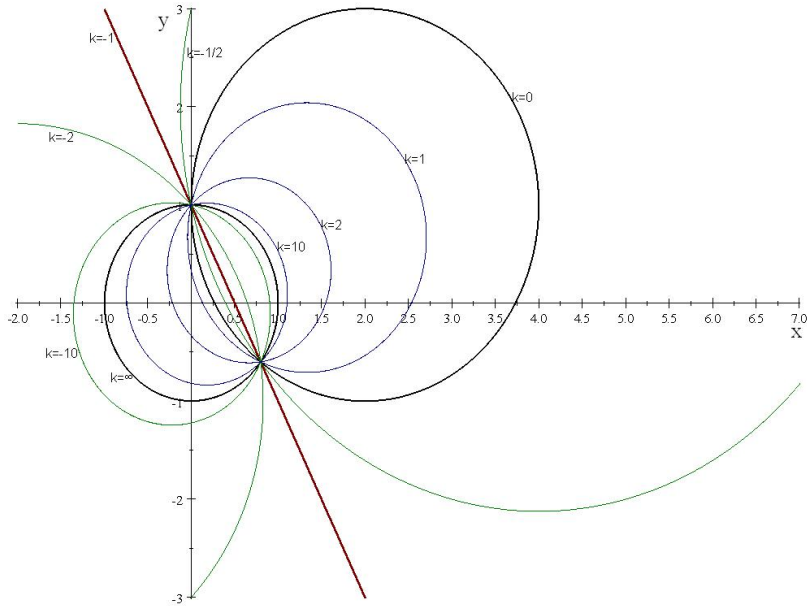
Combinazione lineare di due circonferenze:

Fascio di circonferenze con due punti comuni

$\Gamma_1 : x^2 + y^2 - 4x - 2y + 1 = 0$ centro $C_1(2, 1)$ raggio 2

$\Gamma_2 : x^2 + y^2 - 1 = 0$ centro $C_2(0, 0)$ raggio 1

fascio: $(k + 1)x^2 + (k + 1)y^2 - 4x - 2y + 1 - k = 0 \quad \forall k \in \mathbb{R}$

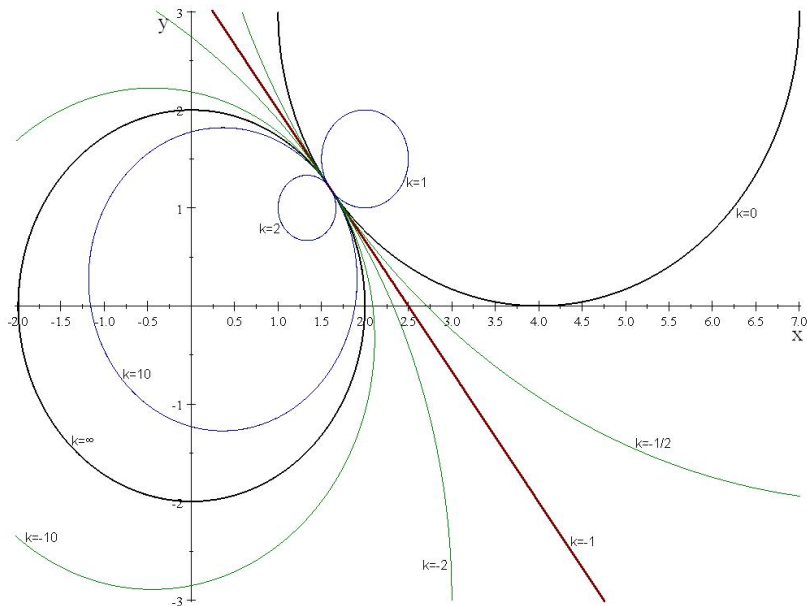


Fascio di circonferenze tangenti

$\Gamma_1 : x^2 + y^2 - 8x - 6y + 16 = 0$ centro $C_2(4, 3)$ raggio 3

$\Gamma_2 : x^2 + y^2 - 4 = 0$ centro $C_1(0, 0)$ raggio 2

fascio: $(k + 1)x^2 + (k + 1)y^2 - 8x - 6y - 4k + 16 = 0 \quad \forall k \in \mathbb{R}$



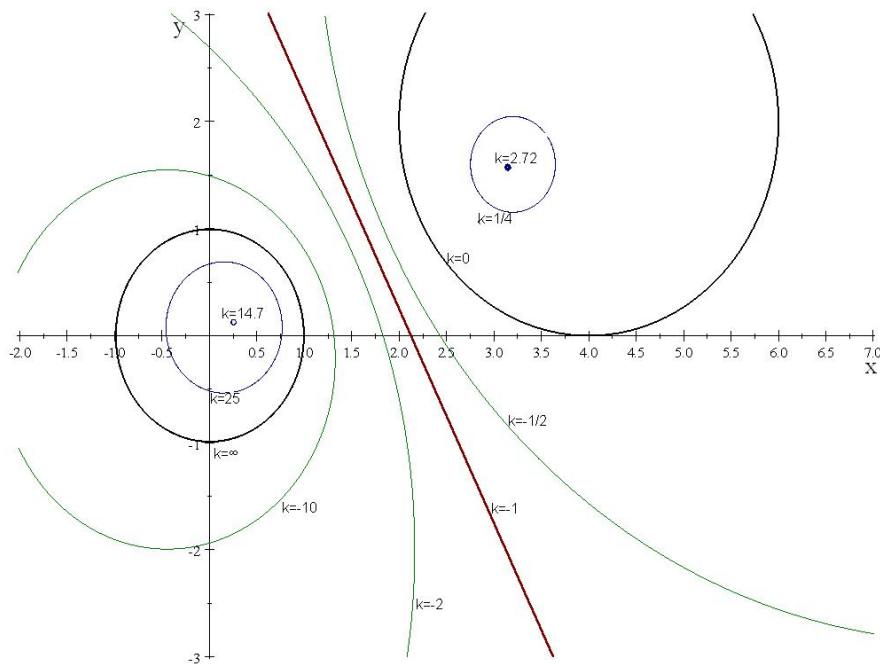
Fascio di circonferenze non intersecantesi

$$\Gamma_1 : x^2 + y^2 - 8x - 4y + 16 = 0 \quad \text{centro } C_2(4, 2) \quad \text{raggio } 2$$

$$\Gamma_2 : x^2 + y^2 - 1 = 0 \quad \text{centro } C_1(0, 0) \quad \text{raggio } 1$$

$$\text{fascio: } (k+1)x^2 + (k+1)y^2 - 8x - 4y - k + 16 = 0 \quad \forall k \in \left(-\infty, \frac{15-\sqrt{209}}{2}\right) \cup \left(\frac{15+\sqrt{209}}{2}, +\infty\right)$$

$$\frac{15+\sqrt{209}}{2} \simeq 14.7 \quad \frac{15-\sqrt{209}}{2} \simeq 0.272$$



Fascio di circonferenze concentriche

$$\Gamma_1 : x^2 + y^2 - 9 = 0 \quad \text{centro } C_2(0, 0) \quad \text{raggio } 3$$

$$\Gamma_2 : x^2 + y^2 - 1 = 0 \quad \text{centro } C_1(0, 0) \quad \text{raggio } 1$$

$$\text{fascio: } (k+1)x^2 + (k+1)y^2 - k - 9 = 0 \quad k \in (-\infty, -9) \cup (-1, +\infty)$$

