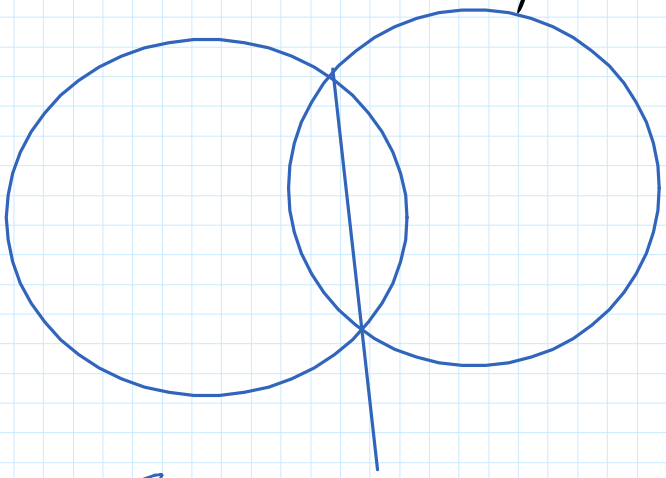
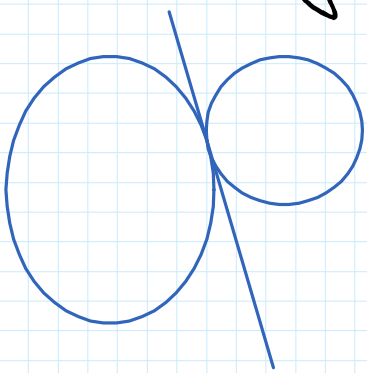
Common chord / Common tangent.



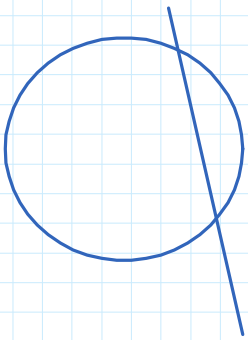


$S - S_1 = 0$

Find intersection of

$x^2+y^2+4x-2y-5=0$ and $x^2+y^2+14x-12y+65=0$

$$x^2+y^2+4x-2y-5-(x^2+y^2+14x-12y+65)=0$$



$$-10x+10y-70=0$$

$$x-y+7=0$$

$$x=y-7$$

$$(y-7)^2+y^2+4(y-7)-2y-5=0$$

$$y^2-14y+49+y^2+4y-28-2y-5=0$$

$$2y^2-12y+16=0$$

$$y^2-6y+8=0$$

$$(y-2)(y-4)=0$$

$y=2$ $y=4$

$x=y-7$ $x=-5$ $x=-3$

$(-5,2)$ $(-3,4)$