20. The number of common tangents to the circles $x^2 + y^2 - 4x - 6y - 12 = 0$ and $x^2 + y^2 + 6x + 18y + 26 = 0$, is

(1) 1 (2) 2 (3) 3 (4) 4

Answer:

Given equation of circle

$x^2 + y^2 - 4x - 6y - 12 = 0$

$or\ (x-2)^2 + (y-3)^2 = 5^2$

$Therefore\ center\ P(2,3)\ Radius\ r_1 = 5$

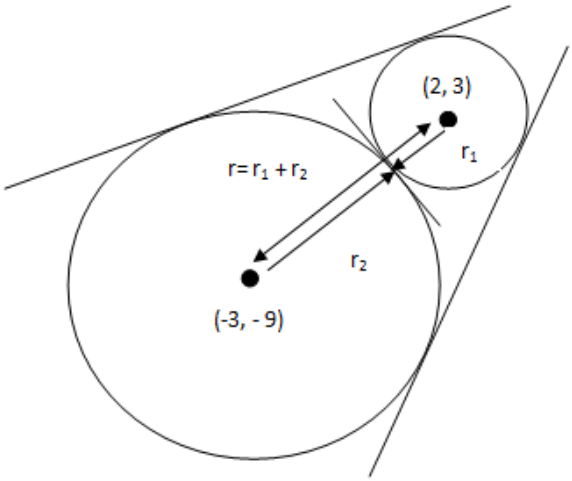
$For\ the\ second\ circle$

$x^2 + y^2 + 6x + 18y + 26 = 0$

$or\ (x+3)^2 + (y+9)^2 = 8^2$

$Therefore\ center\ of\ the\ circle\ Q(-3,-9)$
$and\ radius\ r_2 = 8$

$also\ PQ = \sqrt{(2+3)^2 + (3+9)^2}$
$= \sqrt{169} = 13 = r_1 + r_2$
$hence\ we\ conclude\ circle\ touches\ externally.$



Correct option is (3) 3