

Pencils and Erasers Only - No Calculators Needed.

- 1 Make a single graph showing both of the curves $x^2 + y^2 - 6x + 12y = -36$ and $4x - 6y = 36$. Label the graph to show that you know which curve is which. Also label important points with their coordinates.

Recognize $4x - 6y = 36$ as a straight-line equation,
 Two easy points: $(0, -6)$ and $(9, 0)$

$x^2 + y^2 - 6x + 12y = -36$ is maybe a circle

$$x^2 - 6x + y^2 + 12y = -36$$

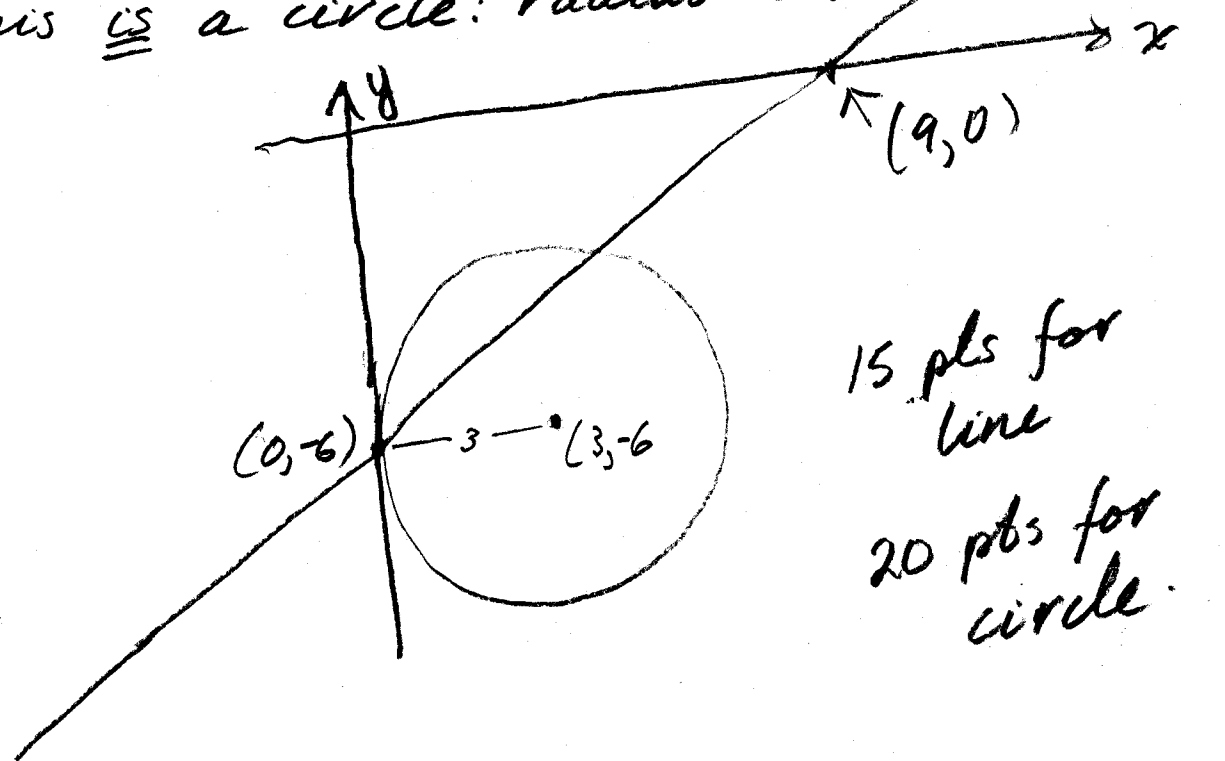
$$\rightarrow (-3)^2 = 9$$

$$\rightarrow 6^2 = 36$$

$$x^2 - 6x + 9 + y^2 + 12y + 36 = -36 + 9 + 36$$

$$(x-3)^2 + (y+6)^2 = 9 = 3^2$$

This is a circle: radius = 3 & center = $(3, -6)$



15 pts for line

20 pts for circle.