

(1)[3 points] State the center and radius of the circle:

$$x^2 + (y - 3)^2 = 36$$

center $(0, 3)$

$$\text{radius} = \sqrt{36} = 6$$

(2)[2 points] State the center and radius of the circle:

$$\left(x - \frac{1}{2}\right)^2 + \left(y + \frac{3}{2}\right)^2 = 1$$

center $\left(\frac{1}{2}, -\frac{3}{2}\right)$

$$\text{radius} = 1$$

(3)[5 points] Put the equation of the circle into standard form and find the center and radius:

$$x^2 + y^2 - 20x + 16y + 128 = 0$$

$$x^2 - 20x + y^2 + 16y + 128 = 0$$

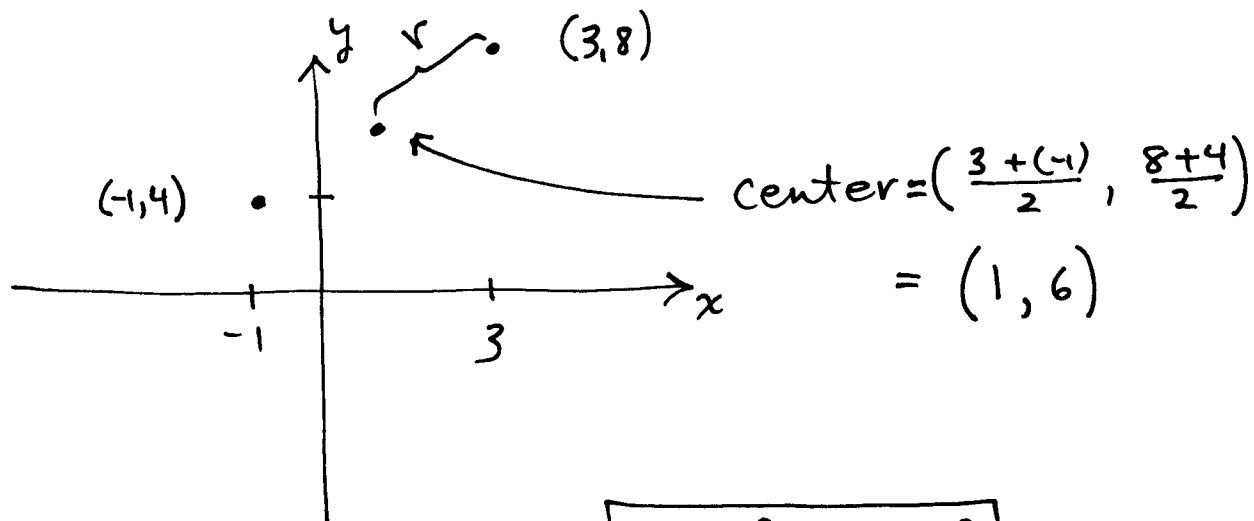
$$(x - 10)^2 - 100 + (y + 8)^2 - 64 + 128 = 0$$

$$(x - 10)^2 + (y + 8)^2 = 36$$

∴ center $(10, -8)$

$$\text{radius} = \sqrt{36} = 6.$$

(4)[5 points] Find the equation of the circle with endpoints of a diameter at $(-1, 4)$ and $(3, 8)$.



$$\begin{aligned} r &= \sqrt{(8-6)^2 + (3-1)^2} \\ &= \sqrt{4+4} \\ &= \sqrt{8} \end{aligned}$$

\therefore equation is

$$(x-1)^2 + (y-6)^2 = 8$$