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MAT 102

1) $x^2 + y^2 + 2x + 6y + 6 = 0$

$(x-h)^2 + (y-k)^2 = r^2$

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

$\left(\frac{2}{2}\right)^2 = 1 \qquad \left(\frac{6}{2}\right)^2 = 9$

$(x^2 + 2x + 1) + (y^2 + 6y + 9) + 6 - 6 = 1 + 9 - 6$

$(x^2 + 2x + 1) + (y^2 + 6y + 9) = 4$

$(x+1)^2 + (y+3)^2 = 4$

Center $= (h, k) = (-1, -3)$ radius $= r = 2$

2. $x^2 + y^2 - 4x + 10y - 8 = 0$

$(x-h)^2 + (y-k)^2 = r^2$

$x^2 - 4x + y^2 + 10y - 8 = 0$

$\left(\frac{-4}{2}\right)^2 = 4 \qquad \left(\frac{10}{2}\right)^2 = 25$

$(x^2 - 4x + 4) + (y^2 + 10y + 25) - 8 + 8 = 4 + 25 + 8$

$(x-2)^2 + (y+5)^2 = 37$

Center $= (h, k) = (2, -5)$

radius $= r^2 = \sqrt{37}$