1) Convert $r = 3\cos(\theta)$ to rectangular form.

2) Multiply both sides by r:

    2a) $r \cdot r = r \cdot 3 \cdot \cos(\theta)$ setup the multiplication

    2b) $r^2 = 3\,r\cos(\theta)$ complet the mutiplication

3) Replace rcos(θ) with x and r^2 with $x^2 + y^2$

    $x^2 + y^2 = 3x$

4) Move the $3x$ to the left with subtraction
    $x^2 - 3x + y^2 = 0$

5) Complete the square on the left.

    $\left(x - \dfrac{3}{2}\right)^2 - \dfrac{9}{4} + y^2 = 0$

1) Complete the square means

    rewrite $x^2 - 3x$ as

    $\left(x - \dfrac{3}{2}\right)^2 - \dfrac{9}{4}$

6) Move the $\dfrac{-9}{4}$ to the right side.

    $\left(x - \dfrac{3}{2}\right)^2 + y^2 = \dfrac{9}{4}$

7) Identify this as a circle centered at $\left(\dfrac{3}{2}, 0\right)$ with radius $\sqrt{\dfrac{9}{4}} = \dfrac{3}{2}$