15. A circle with centre at point P(a, b) and having a radius r touches externally the

circles

$$x^2 + y^2 = 4 \text{ and } x^2 + y^2 - 6x + 8 = 0. \text{ Show that } a = \frac{r+6}{3},$$

and that the locus of P is a curve $y^2 = 8(x - 1)(x - 2)$.