5)

$$\frac{dx}{dt} = -x + ay + b^2y$$

$$\frac{dy}{dt} = b - ay + x^2y$$

Putting $\frac{dx}{dt} = \frac{dy}{dt} = 0$ gives us the stationary point,

Putting $\frac{dx}{dt} = 0$, we get

$$-x + ay + b^2y = 0$$

$$\implies x = ay + b^2y$$

$$\implies x = y(a + b^2)$$

$$\implies \boxed{y = \frac{x}{a + b^2}} \tag{1}$$

Putting $\frac{dy}{dt} = 0$, we get

$$b - ay + x^2y = 0$$

$$\implies b = ay + x^2y$$

$$\implies b = y(a + x^2)$$

$$\implies \boxed{y = \frac{b}{a + x^2}} \tag{2}$$

Using (1) and (2),

$$\implies y = \frac{x}{a + b^2} = \frac{b}{a + x^2}$$

$$\implies x(a + x^2) = b(a + b^2)$$

$$\implies ax - ba + x^3 - b^3 = 0$$

$$\implies a(x - b) + (x - b)(x^2 + b^2 + bx) = 0$$

$$\implies (x - b)(x^2 + bx + a + b^2) = 0$$

Since a and b are positive, quadratic factor has no real roots as its determinant is negative. So, equation is satisfied only when $x - b = 0$. So, $x = b$.

Putting $x = b$ in (1), we get $y = \frac{b}{a+b^2}$