$$(P - x_1) = (x_1 - x_0)\alpha + (x_2 - x_0)\beta$$

$$(P - y_0) = (y_1 - y_0)\alpha + (y_2 - y_0)\beta$$

$$(P - x_2)(y_1 - y_0) = (y_1 - y_0)(x_1 - x_0)\alpha + (x_2 - x_0)(y_1 - y_0)\beta$$
$$\quad (-) \qquad\qquad\qquad (-) \qquad\qquad\qquad (-)$$
$$(P - y_0)(x_1 - x_0) = (y_1 - y_0)(x_1 - x_0)\alpha + (y_2 - y_0)(x_1 - x_0)\beta$$

$$(P_x - x_0)(y_1 - y_0) - (P_y - y_0)(x_1 - x_0)$$

$$= \left[(x_2 - x_0)(y_1 - y_0) + (y_2 - y_0)(x_1 - x_0) \right]\beta$$

$$\frac{(P_x - x_0)(y_1 - y_0) - (P_y - y_0)(x_1 - x_0)}{(x_2 - x_0)(y_1 - y_0) - (y_2 - y_0)(x_1 - x_0)} = \beta$$

$$(P - x_0) = (x_1 - x_0)\alpha$$
$$-(x_2 - x_0)\beta$$

$$(x_1 - x_0)\,\alpha = \frac{(P_x - x_0) - (x_2 - x_0)\beta}{(x_1 - x_0)}$$