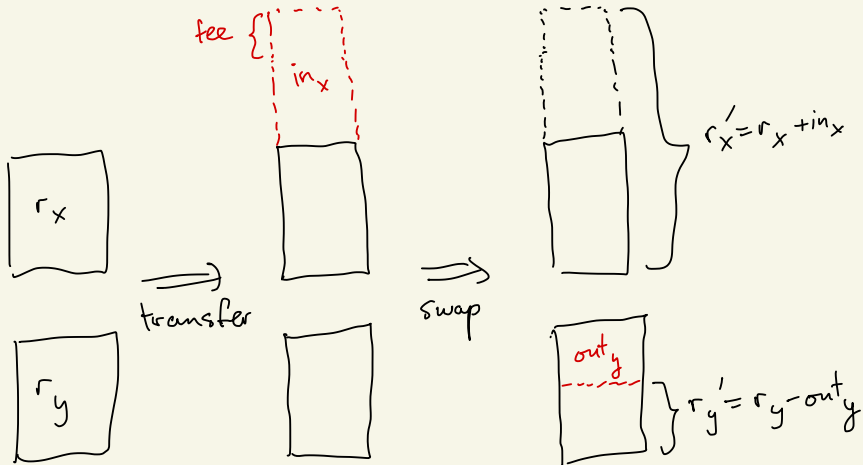


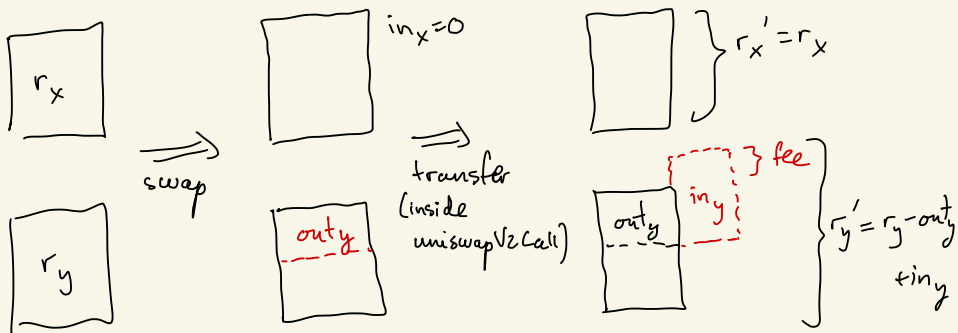
(flash) swap:



$$(r'_x - \overbrace{0.003 in_x}^{fee}) \cdot r'_y \geq r_x \cdot r_y$$

$$= (r_x + 0.997 in_x) \cdot (r_y - out_y) \geq r_x \cdot r_y$$

flashloan:



$$(r'_x - 0.003 \overset{0}{in_x}) (r'_y - 0.003 in_y) \geq r_x \cdot r_y$$

$$\cancel{r_x} \cdot (r_y - out_y + in_y - 0.003 in_y) \geq \cancel{r_x} \cdot r_y$$

$$0.997 in_y \geq out_y$$

$$in_y \geq \frac{1}{0.997} out_y \approx 0.003009 out_y$$