

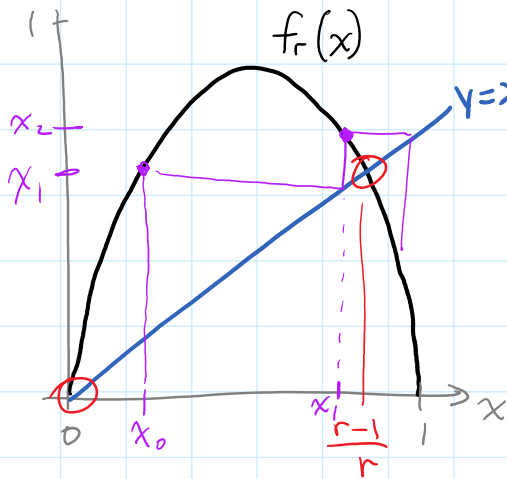
FIXED POINT:

a value x^* such that $f_r(x^*) = x^*$

Since $f_r(x) = rx(1-x)$, fixed points satisfy

$$rx^*(1-x^*) = x^*$$

one solution: $x^* = 0$



$$r(1-x^*) = 1$$

$$r - rx^* = 1$$

$$-rx^* = 1 - r$$

$$rx^* = r - 1$$

$$x^* = \frac{r-1}{r}$$

Summary so far:

$0 \leq r \leq 3$: trajectory converges to $x^* = \frac{r-1}{r}$
(as long as $x_0 \neq 0$)

$3 < r < r_2$: trajectory approaches a 2-cycle
 (it oscillates between 2 values)

$r > r_2$? 4-cycle? then 8-cycle? etc.