Null Clines for Model #1

(0, 0)

P

**III**

Test Point $P\_{III}(\frac{s}{aα}-ε, \frac{r}{α}-ε)$

**IV**

Test Point $P\_{IV}(\frac{s}{aα}+ε, \frac{r}{α}-ε)$

**II**

Test Point $P\_{II}(\frac{s}{aα}-ε, \frac{r}{α}+ε)$

**I**

Test Point $P\_{I}(\frac{s}{aα}+ε, \frac{r}{α}+ε)$

$$x= \frac{s}{aα}$$

$$y= \frac{r}{α}$$

Null Clines for Model #1

(0, 0)

P

$$x= \frac{s}{aα}$$

$$y= \frac{r}{α}$$

Null Clines for Model #2

(0, 0)

$$x= \frac{s}{aα}$$

**III**

Test Point $P\_{III}(\frac{s}{aα}-ε, \frac{r}{α}(1-\frac{x}{k})-ε)$

**IV**

Test Point $P\_{IV}(\frac{s}{aα}+ε, \frac{r}{α}(1-\frac{x}{k})-ε)$

**I**

Test Point $P\_{I}(\frac{s}{aα}+ε, \frac{r}{α}(1-\frac{x}{k})+ε)$

**II**

Test Point $P\_{II}(\frac{s}{aα}-ε, \frac{r}{α}(1-\frac{x}{k})+ε)$

$$y= \frac{r}{α}(1-\frac{x}{k})$$

P

Null Clines for Model #2

$$y= \frac{r}{α}(1-\frac{x}{k})$$

(0, 0)

$$x= \frac{s}{aα}$$

$$y= \frac{r}{α}$$

Null Clines for Model #3

P

(0, 0)

$$x= \frac{sd}{c-s}$$

**II**

Test Point $P\_{II}(\frac{sd}{c-s}-ε, \frac{r}{c}(1-\frac{x}{k})(d+x)+ε)$

**I**

Test Point $P\_{I}(\frac{sd}{c-s}+ε, \frac{r}{c}(1-\frac{x}{k})(d+x)+ε)$

P

$$y= \frac{r}{c}(1-\frac{x}{k})(d+x)$$

**III**

Test Point $P\_{III}(\frac{sd}{c-s}-ε,\frac{r}{c}(1-\frac{x}{k})(d+x)-ε)$

**IV**

Test Point $P\_{IV}(\frac{sd}{c-s}+ ε, \frac{r}{c}\left(1-\frac{x}{k}\right)\left(d+x\right)-ε)$

Null Clines for Model #3

(0, 0)

$$x= \frac{sd}{c-s}$$

P

$$y= \frac{r}{c}(1-\frac{x}{k})(d+x)$$