

plug n and c into eq ③

$$\rightarrow \frac{dy}{dt} = ry^V \left(\frac{n}{k_n + n} \right) \left(\frac{c}{k_c + c} \right) - qy$$

$$0 = ry^V \left(\frac{u_n - y/r}{k_n + u_n - y/r} \right) \left(\frac{u_c - y/r}{k_c + u_c - y/r} \right) - qy$$

factor out y

↓

$$q = rV \left(\frac{u_n - y/r}{k_n + u_n - y/r} \right) \left(\frac{u_c - y/r}{k_c + u_c - y/r} \right)$$

solve for y