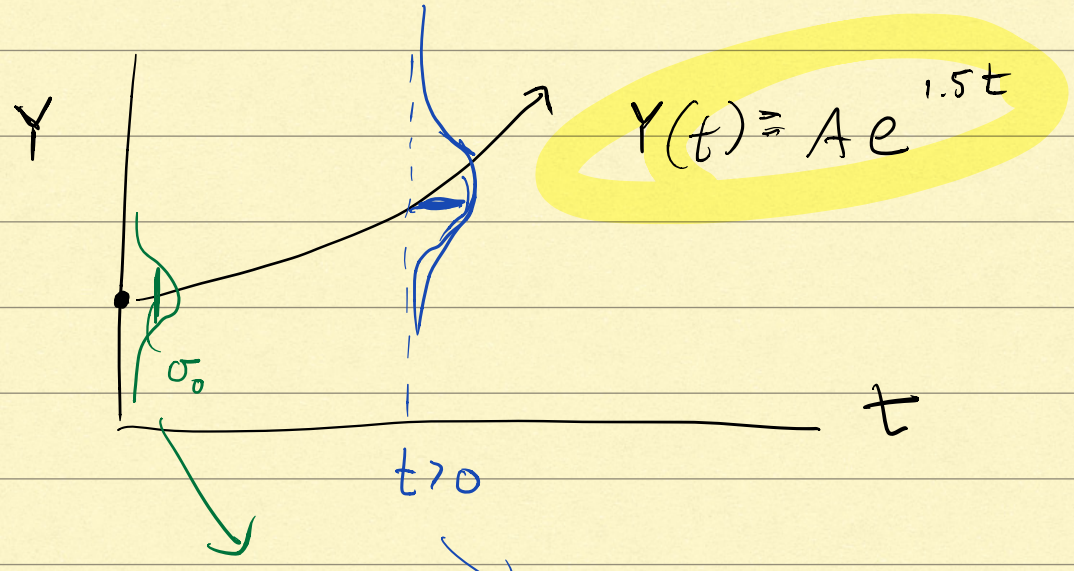
EX

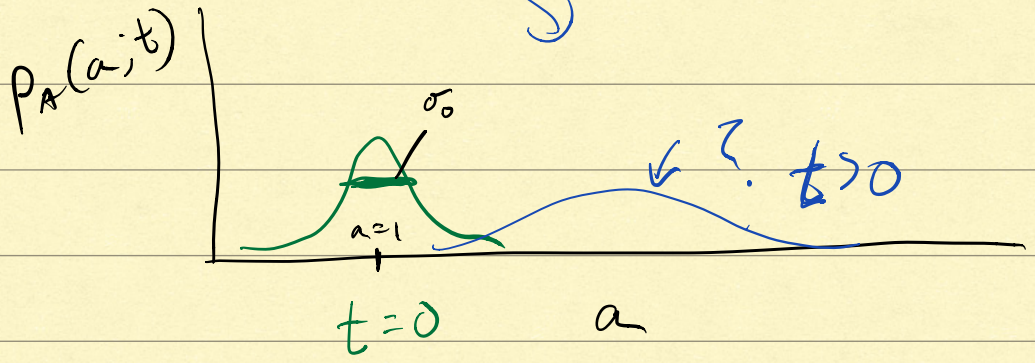
$$\frac{dY}{dt} = (R-1)Y \qquad R = 2.5$$

$$Y(0) = A$$

suppose $A \sim \rho_A(a)$

$$\rho_A(a) = \frac{1}{\sqrt{2\pi}\sigma_0} e^{-\frac{(a-1)^2}{2\sigma_0^2}}$$





$$Y = g(A) \qquad g(a) = ae^{1.5t}$$

$$g^{-1}(y) = \frac{y}{e^{1.5t}} = y e^{-1.5t}$$

$$y = a e^{1.5t}$$

$$\frac{dg}{da} = e^{1.5t}$$

$$\left.\frac{dg}{da}\right|_{a = g^{-1}(y)} = e^{1.5t}$$

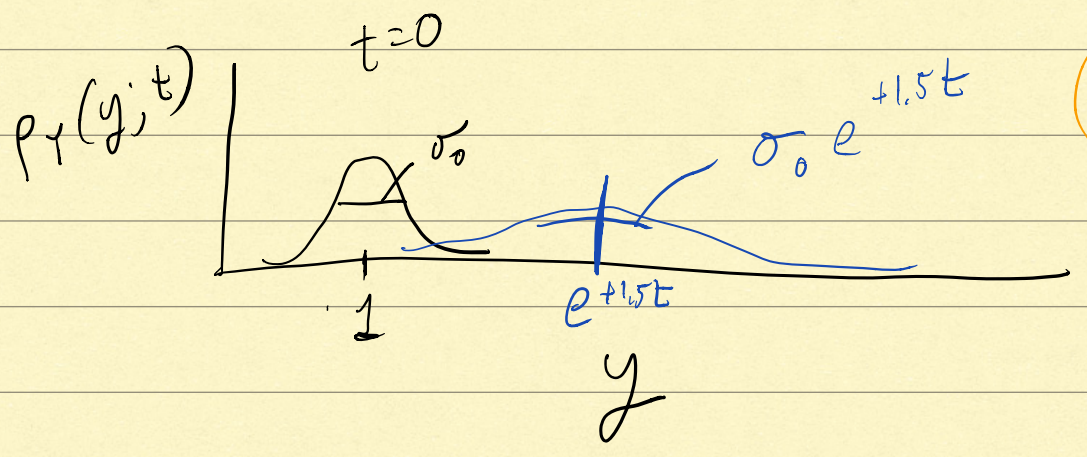
$$X = g(a)$$

$$p_X(x) = p_A(g^{-1}(x)) \cdot \left|\left(\frac{dg}{da}\right)^{-1}\right|_{a = g^{-1}(x)}$$

$$p_Y(y;t) = \frac{1}{\sqrt{2\pi}\sigma_0} \exp\left(-\frac{(y e^{-1.5t} - 1)^2}{2\sigma_0^2}\right) \cdot e^{-1.5t}$$

$$= \frac{1}{\sqrt{2\pi}\sigma_0 e^{+1.5t}} \exp\left(-\frac{(y - e^{+1.5t})^2}{2\sigma_0^2 (e^{+1.5t})^2}\right)$$

$$\frac{(y e^{-1.5t} - 1)^2}{2\sigma_0^2}$$



$$\frac{(e^{+1,5t})^2 (ye^{-1,5t} - 1)^2}{(e^{+1,5t})^2 2\sigma_0^2}$$

PS6

$$\frac{dY}{dt} = (R-1)\,Y$$

$$Y(0) = 1$$

$$R \sim p_R(r) =$$

WHAT IS $p_Y(y;t)$?