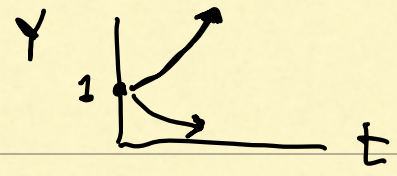
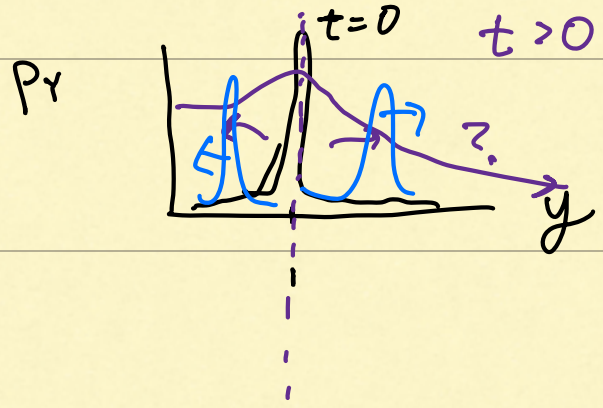
PS 6



$Y(t)$?

$p_Y(y;t)$



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$R \sim p_R(r)$

$Y = g(R)$, $Y \sim p_Y(y)$

$\frac{dg}{dr}$ ↙
~~~~

$$p_Y(y) \overset{?}{=} \frac{1}{yr\sqrt{2\pi\sigma^2}} \cdot \exp\left(-\frac{(-\ln(y\cdot\sqrt{2\sigma^2}t))^2}{\quad}\right)$$

$$\overset{?}{=} \frac{1}{r\sqrt{2\pi\sigma^2}} \cdot y^{-\frac{\ln y - 2t^2\sigma^2}{2t^2\sigma^2}}$$

$$\overset{?}{=} \frac{t}{r\cdot \ln y\sqrt{2\pi\sigma^2}} \cdot y^{\frac{-\ln y}{2\sigma^2t^2}}$$

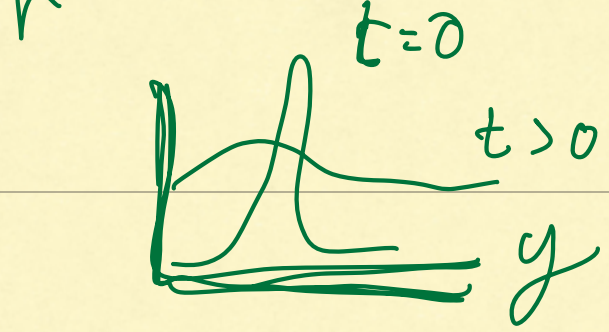
$$\overset{?}{=} \frac{1}{ty\sqrt{2\pi\sigma^2}} \cdot \exp\left(\frac{-(\ln y)^2}{2t^2\sigma^2}\right)$$

$$= \frac{1}{ry\sqrt{2\pi\sigma^2}} e^{-\frac{|\ln|y|^2}{t2\sigma^2}}$$

$$\sum_k p_R(g^{-1}(y_k)) \left|\frac{dy}{dr}\right|^{-1}$$

FAKE

$$p_Y(y) = p_R\left(\frac{1}{ty} + \sin(y)\right) \cdot t^{y^2}$$


t=0
t>0
y