

### C. Stochastic Calculus

$$1. a) df(X) = d(\ln(X^n)) = \frac{1}{X^n} \cdot nX^{n-1} dX = \frac{n}{X} dX$$

$$b) df(X) = d(e^{nX}) = e^{nX} \cdot n dX = f(X)n dX \Leftrightarrow \frac{df}{f} = n dX \Leftrightarrow A=0, B=n$$

$$c) df(X) = d(\ln X) = \frac{1}{X} dX = f(X) \ln a dX \Leftrightarrow \frac{df}{f} = \ln a dX \Leftrightarrow$$

$$\Leftrightarrow (A=0, B=\ln a)$$