Stochastis	processes
	ment-4

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1. 
$$H(P) = \frac{1}{2} \frac{1}{92} + \frac{1}{4} \frac{1}{94} + \frac{1}{8} \frac{1}{98} + \frac{1}{16} \frac{1}{16}$$
  
 $H(P) = 1.875$ 

$$-H(q) = \frac{1}{2} \frac{4}{9} \frac{1}{8} \frac{4}{8} \times 4$$

$$= \frac{1}{2} \frac{1}{4} \frac{1}{2} + \frac{1}{4} \frac{1}{4} \frac{1}{4} \frac{1}{8} \frac{1}{8}$$

$$= \frac{1}{2} \frac{1}{2} + \frac{1}{4} \frac{1}{4} \frac{1}{8} \frac{1}{8} \frac{1}{8}$$

$$+ \frac{1}{16} \frac{1}{18} \frac{1}{16} + \frac{1}{16} \frac{1}{18} \frac{1}{18}$$

$$= 0.125$$

$$D(g||p) = \frac{1}{2} \frac{|g|/2}{1/2} + \frac{1}{8} \frac{|g|/8}{1/4} + \frac{1}{8} \frac{|g|/8}{1/16}$$

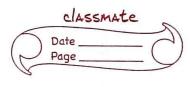
$$= \frac{1}{8} \frac{|g|/8}{1/6} + \frac{1}{8} \frac{|g|/8}{1/16}$$

W

$$H(q) = \frac{1}{3} lg \frac{1}{3} \times 3$$
  
= 1.585

$$D(9||P) = \frac{1}{3} \left[ \frac{1}{3} \frac{1}{2} + \frac{1}{3} \frac{1}{3} + \frac{1}{3} \frac{1}{4} \frac{1}{3} \right]$$

$$= 0.0817$$



$$0 = \int P(x) \left[ \frac{1}{2} \log(2\pi\sigma^2) - (x-\mu)^2 \right] dx$$

$$2 = -\frac{1}{2} \log(82\pi\sigma^2) - \frac{1}{2} P(x)(x^2+\mu^2-2\mu) dx$$

$$= -\frac{1}{2} \log(2\pi\sigma^2) - \frac{1}{2} \left[ \frac{E(x^2) + H^2 - 2H}{2} + \frac{E(x^2)}{2} \right]$$

$$= -\frac{1}{2} - \frac{1}{2} \log(2\pi\sigma^2) - \frac{1}{2} \left[ \frac{2H^2 - 2H^2 + \sigma^2}{2} + \frac{2H^2}{2} \right]$$

$$= -\frac{1}{2} - \frac{1}{2} \log(2\pi\sigma^2) - \frac{1}{2} \left[ \frac{P(x)}{2} \left( \frac{x^2 + \mu^2 - 2\mu}{2} \right) + \frac{2H^2}{2} \right]$$

$$= -\frac{1}{2} \log(2\pi\sigma^2) - \frac{1}{2} \left[ \frac{H^2 + \mu^2 - 2H}{2} + \frac{\mu^2}{2} \right]$$

$$= -\frac{1}{2} \log(2\pi\sigma^2) - \frac{1}{2} \left[ \frac{H^2 + \mu^2 - 2H}{2} + \frac{\mu^2}{2} \right]$$

$$= -\frac{1}{2} \log(2\pi\sigma^2) - \frac{1}{2} \left[ \frac{H^2 + \mu^2 - 2\mu}{2} + \frac{\mu^2}{2} \right]$$

$$= \frac{2}{2} \left[ \frac{2\pi\sigma^2}{2} \right]$$

$$= \frac{2}{2} \left[ \frac{2\pi\sigma^2}{2} \right] + \frac{1}{2} \left[ \frac{2\pi\sigma^2}{2} \right] + \frac{1}{2} \left[ \frac{2\pi\sigma^2}{2} \right]$$

$$= \frac{2}{2} \left[ \frac{2\pi\sigma^2}{2} \right] + \frac{2\pi\sigma^2}{2} + \frac{2\pi\sigma^2}{2} \right]$$

