

**Concept Question 8-3:** If  $x$  is a continuous random variable, what is  $\mathcal{P}[x = c]$  for any constant  $c$ ?

Zero.  $\mathcal{P}[x_0 \leq x < x_0 + \delta] = p(x_0)\delta$ , but this is zero if  $\delta = 0$  (unless the pdf  $p(x_0)$  has an impulse at  $x_0$ ).