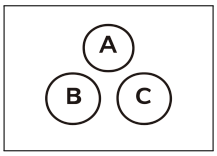
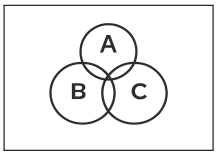
21 Discrete Distribution Poisson Variable J



$\lambda = 1$



$P(X = k) = e^{-\lambda}\frac{\lambda^k}{k!}$

$P(X = 0) = e^{-1}\frac{1^0}{0!} = e^{-1} \approx \boxed{0.37}$

$\lambda = 2.5$

$P(X \leq 1) = ?$

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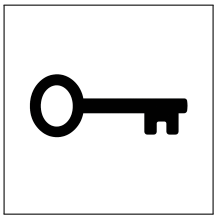

$\lambda = 2.5$
$P(X \leq 1) = ?$

$P(X \leq 1) = P(X = 0) + P(X = 1)$
$P(X \leq 1) = e^{-2.5}\frac{2.5^0}{0!} + e^{-2.5}\frac{2.5^1}{1!}$
$P(X \leq 1) = e^{-2.5}(1 + 2.5)$
$P(X \leq 1) = 3.5\, e^{-2.5}$

$e^{-2.5} \approx 0.082085$
$3.5 \times 0.082085 \approx 0.2873$

$P(X \leq 1) \approx \boxed{0.2873}$