

$X \sim \mathcal{E}(0,34)$ Fonction de densité :

$$f(x) = \lambda e^{-\lambda x} = 0,34 e^{-0,34x}$$

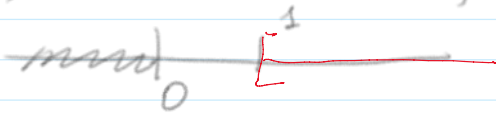
$$P(X > 5) = 1 - P(X \leq 5) = 1 - \int_0^5 0,34 e^{-0,34x} dx = 1 - \left[-e^{-0,34x} \right]_0^5 = 1 - \left(-e^{-0,34 \cdot 5} - (-e^0) \right)$$

$$= e^{-0,34 \cdot 5} = e^{-1,7} \approx 0,183$$

Exercice 83 p. 357

$X \sim \mathcal{E}(0,512)$ Fonction de densité : $f(x) = \lambda e^{-\lambda x} = 0,512 e^{-0,512x}$

$$P(X \geq 1) = 1 - P(X < 1) = 1 - \int_0^1 0,512 e^{-0,512x} dx = 1 - \left[-e^{-0,512x} \right]_0^1 = e^{-0,512 \cdot 1} \approx 0,599$$



Exercice 84 p. 357

Si $P(A) \neq 0$ $P(B) = \frac{P(B \cap A)}{P(A)}$

$X \sim \mathcal{E}(4)$ donc $f(x) = 4e^{-4x}$

$$P_{(X \geq 1)}(X \geq 2) = \frac{P((X \geq 1) \cap (X \geq 2))}{P(X \geq 1)} = \frac{P(X \geq 2)}{P(X \geq 1)} = \frac{1 - P(X < 2)}{1 - P(X < 1)} = \frac{1 - \int_0^2 4e^{-4x} dx}{1 - \int_0^1 4e^{-4x} dx}$$

$$= \frac{1 - \left[-e^{-4x} \right]_0^2}{1 - \left[-e^{-4x} \right]_0^1} = \frac{e^{-8}}{e^{-4}} = e^{-8+4} = e^{-4} \approx 0,018$$

$$\frac{e^a}{e^b} = e^{a-b}$$