Respuestas Guía 4

4.1) a) $p_Y(y) = \dfrac{y+1}{9}$, $y \in \left\{ \dfrac{k}{4} - 1, k = 0, 1, 2, .., 8 \right\}$

b) $p_Y(y) = \dfrac{\sqrt{2y}}{72}$, $y \in \{2k^2, k = 1, 2, .., 8\}$

c) $p_Y(y) = \dfrac{2}{9}$ si $y \in \{2, 9, 14, 17\}$; $p_Y(y) = \dfrac{1}{9}$ si $y = 18$

d) $p_Y(y) = \begin{cases} 0 & si \quad y = 128 \\ 1/36 & si \quad y = 112 \\ 4/72 & si \quad y = 108 \\ 6/72 & si \quad y = 101 \\ 1/3 & si \quad y = 96 \\ 1/3 & si \quad y = 93 \\ 1/6 & si \quad y = 92 \end{cases}$

4.2) $p_Y(y) = \begin{cases} \cosh(2)e^{-2} & si \quad y = 0 \\ \sinh(2)e^{-2} & si \quad y = 1 \end{cases}$

4.3) a) $f_Y(y) = \frac{y-b}{2a^2}\mathbf{1}_{\{b<y<2a+b\}}$ si $a > 0$

$f_Y(y) = \frac{b-y}{2a^2}\mathbf{1}_{\{2a+b<y<b\}}$ si $a < 0$

b) $f_Y(y) = \frac{1}{6\sqrt[3]{-y}}\mathbf{1}_{\{-8<y<0\}}$

c) $f_Y(y) = \dfrac{3}{5000}(1 - e^{-t/5000})^2 e^{-t/5000}\mathbf{1}_{\{t>0\}}$

d) $f_Y(y) = \frac{1,5}{\sqrt{y+2,25}}\mathbf{1}_{\{-2,25<y<-2\}} + \frac{1,5-\sqrt{y+2,25}}{4\sqrt{y+2,25}}\mathbf{1}_{\{-2<y<0\}}$

4.4) (a) $f_C(c) = \frac{1}{\pi\sqrt{1-c^2}}\mathbf{1}_{\{-1<c<1\}}$

(b) 1/3

4.5) $f_Y(y) = \frac{1}{10}\mathbf{1}_{\{0<y<5\}} + \frac{1}{20}\mathbf{1}_{\{5<y<15\}}$

4.6) $F_Y(y) = \frac{20v+10}{40}\mathbf{1}_{\{0\leq v<1\}} + \mathbf{1}_{\{v\geq 1\}}$

4.7) $P(X = k) = e^{-\frac{k-1}{4}}(1 - e^{-1/4})$, $k \geq 1$.

4.18) $P(X + Y = w) = \dfrac{1}{144}$ si $w = 2$

$P(X + Y = w) = \dfrac{2}{144}$ si $w = 3$

$P(X + Y = w) = \dfrac{3}{144}$ si $w = 4$

$P(X + Y = w) = \dfrac{1}{36}$ si $w \in \{5, 6, ..., 40\}$

4.19) (a) $L + M \sim \mathcal{P}(10)$

(b) $M|L + M \sim \mathcal{B}i(10, 4/5)$

(c) 0.99992.

4.20) (a) $f_A(a) = -\ln(a)\mathbf{1}_{\{0<a<1\}}$

(b) 0.4034