

Respuestas Guía 2

- 2.2) (a) $P(X = -2) = \frac{1}{3}, P(X = 2) = \frac{1}{3}$
 (b) $\frac{2}{3}; 1; \frac{2}{3}; \frac{1}{3}$
 (c) $0; \frac{1}{3}; 0.$
 (d) $1; \frac{2}{3}$
 (e) $\frac{1}{2}$
- 2.3) (a) $P(k) = \binom{4}{k} \left(\frac{3}{8}\right)^k \left(\frac{5}{8}\right)^{4-k}, k = 0, 1, 2, 3, 4$
 (b) $P(k) = \frac{\binom{3}{k} \binom{5}{4-k}}{\binom{8}{4}}, k = 0, 1, 2, 3$
- 2.4) (a) $P(n) = \binom{n-1}{k-1} \left(\frac{5}{8}\right)^k \left(\frac{3}{8}\right)^{n-k}, n \geq k$
 (b) $\frac{3}{11}$
 (c) $\frac{45}{512}$
 (d) $\frac{27}{512}$
 (e) $\frac{81}{256}$
- 2.5) (a) 0.001752
 (b) 0.39347
- 2.7) 0.31617
- 2.8) (a) 0.223130
 (b) 0.8088468; 0.591295
- 2.18) 0.25389
- 2.19) (a) $f_{X|3 < X < 12}(x) = \frac{2x}{135} \mathbf{1}_{(3,12)}$
 (b) $f_{X|X < 3 \vee X > 12}(x) = \frac{x}{45} \mathbf{1}_{(0,3) \cup (12,15)}$
- 2.20) (a) $f_{X|X < 3}(x) = \frac{6}{17} \mathbf{1}_{(0,2)} + \frac{10-2x}{17} \mathbf{1}_{(2,3)}$
 (b) $f_{X|X > 3}(x) = \frac{10-2x}{3} \mathbf{1}_{(3,5)}$

$$2.21) \text{ a) } P(x, y) = \frac{\binom{3}{x} \binom{2}{y} \binom{3}{3-x-y}}{\binom{8}{4}}, x = 0, 1, 2, 3; y = 0, 1, 2$$

$$P_X(x) = \sum_{y=0}^2 \frac{\binom{3}{x} \binom{2}{y} \binom{3}{3-x-y}}{\binom{8}{4}}, x = 0, 1, 2, 3$$

$$P_Y(y) = \sum_{x=0}^3 \frac{\binom{3}{x} \binom{2}{y} \binom{3}{3-x-y}}{\binom{8}{4}}, y = 0, 1, 2$$

$$P(X + Y \leq 2) = \frac{29}{70}$$

$$\text{b) } P(x, y) = \frac{4!}{x!y!(4-x-y)!} \left(\frac{3}{8}\right)^{4-y} \left(\frac{2}{8}\right)^y, x = 0, 1, 2, 3, 4; y = 0, 1, 2, 3, 4$$

$$P_X(x) = \sum_{y=0}^4 \frac{4!}{x!y!(4-x-y)!} \left(\frac{3}{8}\right)^{4-y} \left(\frac{2}{8}\right)^y, x = 0, 1, 2, 3, 4$$

$$P_Y(y) = \sum_{x=0}^4 \frac{4!}{x!y!(4-x-y)!} \left(\frac{3}{8}\right)^{4-y} \left(\frac{2}{8}\right)^y, y = 0, 1, 2, 3, 4$$

$$P(X + Y \leq 2) = 0,32958$$

$$2.22) \text{ a) } 0.5$$

$$\text{b) } f_X(x) = \frac{\sqrt{4-x^2}}{\pi} \mathbf{1}_{(0,2)}(x)$$

$$f_Y(y) = \frac{\sqrt{4-y^2}}{2\pi} \mathbf{1}_{(-2,2)}(y)$$

c) No son independientes.

$$2.23) \text{ a) } 5/12$$

$$\text{b) } f_X(x) = 4x(1-x^2) \mathbf{1}_{(0,1)}(x)$$

$$f_Y(y) = 4y^3 \mathbf{1}_{(0,1)}(y)$$

c) No.

$$2.25) \text{ a) } 0.002478 \quad \text{b) } 0.0148725 \quad \text{c) } 1/3$$

$$2.26) 8/9$$