

3.5.11 (a) $E(X) = \frac{27}{19}$ (b) $E(Y) = \frac{52}{95}$ (c) $E(X|Y = y) = 3(2 + y^3)/(4 + 3y^3)$
(d) $E(Y|X = x) = (x^2/2 + 1/5)/(x^2 + 1/4)$ (e) $E[E(X|Y)] = \int_0^1 \frac{3(2+y^3)}{4+3y^3} \cdot \frac{4}{19}(4 + 3y^3)dy = \frac{27}{19}$ (f) $E[E(Y|X)] = \int_0^2 \frac{x^2/2+1/5}{x^2+1/4} \cdot \frac{6}{19}(x^2 + \frac{1}{4})dx = \frac{52}{95}$