c) $\bar{\pi}(Y=+1) = \int_{x_1}\int_{x_2} P(Y=+1|X)\, p(x)\, dx_1 dx_2$

$= \int_0^1 \int_0^1 \frac{x_1+x_2}{2} \cdot 3x_2^2 \, dx_1 dx_2$

$= \frac{3}{2} \int_0^1 \int_0^1 \left(x_1 x_2^2 + x_2^3\right) dx_1 dx_2$

$= \frac{3}{2} \int_0^1 \left[\frac{1}{2} x_1^2 x_2^2 + x_1 x_2^3\right]_0^1 dx_2$

$= \frac{3}{2} \int_0^1 \left(\frac{1}{2} x_2^2 + x_2^3\right) dx_2$

$= \frac{3}{2} \left[\frac{1}{6} x_2^3 + \frac{1}{4} x_2^4\right]_0^1$

$= \frac{3}{2} \left[\frac{1}{6} + \frac{1}{4}\right]$