

Exam 2

April 11, 2024

1. Let $f_Y(y) = cy^2/e^y$, $y > 0$. Find the value of constant c so that $f_Y(y)$ is a valid pdf.
2. Suppose that (Y_1, Y_2) have a joint pdf $f(y_1, y_2) = e^{-y_2}$, where $0 < y_1 < y_2 < \infty$. Find the conditional density of Y_2 , given $Y_1 = y_1$.
3. Let

$$f(y_1, y_2) = 24y_1y_2, \quad 0 < y_1 < 1, \quad 0 < y_2 < 1, \quad 0 < y_1 + y_2 < 1$$

- (a) Compute $E(Y_1Y_2)$.
- (b) (Bonus) Compute $P(Y_1 \leq Y_2)$.