1. A continuous random variable $Y$ has range $1 \leq Y \leq 5$. Suppose that $Y$ has probability density function

$$f_Y(y) = cy^3,$$

where $c$ is a constant.

(a) Find the exact value of the constant $c$.

(b) Compute $F_Y(3)$.

(c) Compute $P(2 < Y < 3)$. 