The continuous random variable X has probability density function f given by

$$f(x) = \begin{cases} \frac{1}{4}(x-1) & 2 \le x \le 4, \\ 0 & \text{otherwise.} \end{cases}$$

(i) Find the distribution function of X.

The random variable Y is defined by $Y = (X - 1)^3$.

- (ii) Find the probability density function of Y.
- (iii) Find the median value of Y.