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**3.** The continuous random variable $Y$ is such that $Y \sim \mathrm{U}[a, b]$, where $a$ and $b$ are constants.

The mean of $Y$ is 6 and the variance of $Y$ is 3

(a) Find the value of $a$ and the value of $b$.

**(3)**

(b) Find the probability that $Y$ is more than 1 standard deviation above the mean.

**(2)**

(c) Define fully the cumulative distribution function of $Y$.

**(2)**

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**Question 3 continued**

**Q3**

**(Total 7 marks)**