Continuous random variables – AS Further Mathematics Statistics

1. June/2022/Paper_7366/02S/No.2

The continuous random variable Y has probability density function f(y) where

$$\int_{-\infty}^{\infty} y f(y) dy = 16 \text{ and } \int_{-\infty}^{\infty} y^2 f(y) dy = 1040$$

Find the standard deviation of Y

Circle your answer.

[1 mark]

28

32

784

1024

2. June/2022/Paper_7366/02S/No.5

The continuous random variable X has probability density function

$$f(x) = \begin{cases} x^3 & 0 < x \le 1 \\ \frac{9}{1696}x^3(x^2 + 1) & 1 < x \le 3 \\ 0 & \text{otherwise} \end{cases}$$

(a) Find P(X < 1.8), giving your answer to three decimal places.

[3 marks]