

## Module 14 self-assessment

### Question 1

Consider a continuous random variable  $X$  with a probability density function

$$p_X(x) = \begin{cases} x/2 & 0 \leq x < 2 \\ 0 & \text{otherwise} \end{cases}.$$

If  $Y = 1 - \frac{\sqrt{4-X^2}}{2}$  what is the PDF of  $Y$ ?

### Question 2

The Mollytech company manufactures laser pointers, which are packaged in boxes of 20 for shipment. Tests have shown that 4% of their light products are defective.

- What is the probability that a box, ready for shipment, contains exactly 3 defective pointers?
- What is the probability that the box contains 3 or more defective pointers?
- Compute the average number of defective laser pointers per box and the standard deviation.