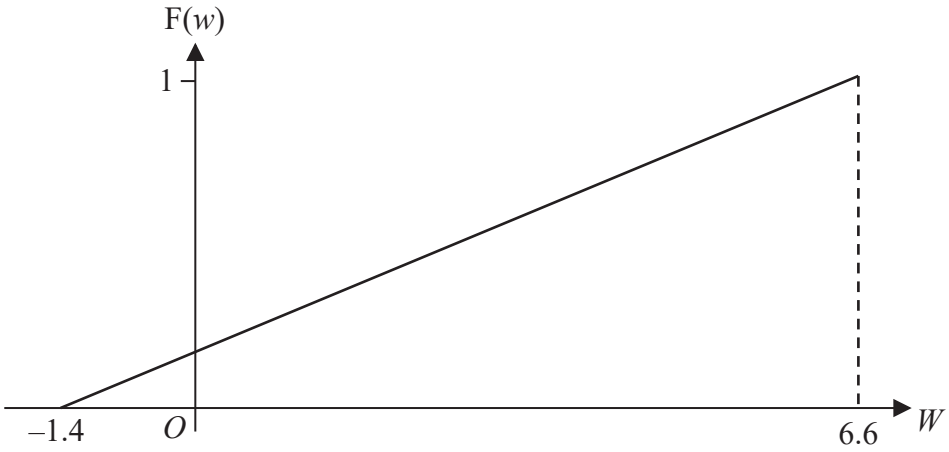
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2. In the summer Kylie catches a local steam train to work each day. The published arrival time for the train is 10 am.

The random variable W is the train's actual arrival time minus the published arrival time, in minutes. When the value of W is positive, the train is late.

The cumulative distribution function F(w) is shown in the sketch below.



(a) Specify fully the probability density function f(w) of W.

(2)

(b) Write down the value of E(W)

(1)

(c) Calculate α such that $P(\alpha \leqslant W \leqslant 1.6) = 0.35$

(2)

A day is selected at random.

(d) Calculate the probability that on this day the train arrives between 1.2 minutes late and 2.4 minutes late.

(2)

Given that on this day the train was between 1.2 minutes late and 2.4 minutes late,

(e) calculate the probability that it was more than 2 minutes late.

(2)

A random sample of 40 days is taken.

(f) Calculate the probability that for at least 10 of these days the train is between 1.2 minutes late and 2.4 minutes late.

(3)

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Question 2 continued

(Total 12 marks)

Q2