

Solutionbank S1

Heinemann Modular Maths for Edexcel AS and A-level

5 The normal distribution

Exercise A, Question 1

Question:

Find the probability that an observation from a standard normal distribution will be less than:

- (a) 1.23,
- (b) 0.97,
- (c) 1.85,
- (d) 0.42,
- (e) 0.09,
- (f) 1.57,
- (g) 1.94,
- (h) 0.603,
- (i) 2.358,
- (j) 1.05379.

Solution:

- (a) $0.89065 \dots = 0.891$ (3 s.f.)
- (b) $0.83398 \dots = 0.834$ (3 s.f.)
- (c) $0.96784 \dots = 0.968$ (3 s.f.)
- (d) $P(\text{less than } 0.42) = 0.66276 \dots = 0.663$ (3 s.f.)
- (e) $P(\text{less than } 0.09) = 0.53586 \dots = 0.536$ (3 s.f.)
- (f) $P(\text{less than } 1.57) = 0.94179 \dots = 0.942$ (3 s.f.)
- (g) $P(\text{less than } 1.94) = 0.97381 \dots = 0.974$ (3 s.f.)
- (h) $P(\text{less than } 0.603) = 0.72675 \dots = 0.727$ (3 s.f.) (from calculator) or if using tables
 $P(\text{less than } 0.603) \approx P(\text{less than } 0.60) = 0.72575$
 $= 0.726$ (3 s.f.)
- (i) $P(\text{less than } 2.358) = 0.99081 \dots = 0.991$ (3 s.f.) (from calculator) or if using tables
 $P(\text{less than } 2.358) \approx P(\text{less than } 2.36) = 0.99086$
 $= 0.991$ (3 s.f.)
- (j) $P(\text{less than } 1.05379) = 0.85401 \dots = 0.854$ (3 s.f.) (from calculator) or if using tables
 $P(\text{less than } 1.05379) \approx P(\text{less than } 1.05) = 0.85314$

= 0.853 (3 s.f.)

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