7. Three independent random samples of size 3

- W_1, W_2, W_3
- X_1, X_2, X_3
- Y_1, Y_2, Y_3

are each taken from a normal population with mean μ and variance σ^2

A random variable C is given by

$$C = 4W_1 - 3X_2 - \overline{Y}$$

(a) Find the distribution of C

(3)

(b) Hence find, using standardisation, $\mathrm{P}(4W_1 < 3X_2 + \overline{Y} + \sigma)$

(3)

A random variable Q is given by

$$Q = 4W_1 - 3W_2 - \overline{W}$$

(c) Find, using standardisation, $\mathrm{P}(Q < 2\sigma)$

(6)

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Question 7 continued

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(Total for Question 7 is 12 marks)

TOTAL FOR PAPER IS 75 MARKS

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