IQM3003 A1 Teacher reference commentary

Mathematics and Data Handling · Component 1 Paper 1

TEACHER STANDARDISATION | Selected extracts | Subject review required before distribution

These selected synthetic responses support discussion of how to apply the marking guidance. They do not form a complete assessment response. Use the approved question paper and marking scheme alongside this document. Use this proposed commentary after the independent marking exercise. The reference judgements require subject confirmation.

Selected task 4d

Distinguishes the requested intercept from a correct calculation of a different intercept and tests the prohibition on follow-through.

Example X

Putting x=0 in my equation gives y=2.5, so the y-axis crossing is (0,2.5).

Proposed mark: 0 / 1

Marking explanation: B0. The reported 2.5 follows the erroneous line, but no follow-through is permitted for this independent mark.

Example Y

(0,1), from A.

Proposed mark: 0 / 1

Marking explanation: B0. The y value of A is not the y-axis intercept.

Example Z

At the y-axis crossing, I put y = 0. Then 4x/3 + 11/3 = 0, so x = −11/4. The coordinates are (−11/4, 0).

Proposed mark: 0 / 1

Marking explanation: B0. The answer gives the x-axis intercept by setting y = 0, whereas the requested y-axis intercept requires x = 0.

Selected task 13b

Separates factorisation credit from correct sign analysis and interval selection.

Example X

(x−4)(x+3)≤0, so x≤−3 or x≥4.

Proposed mark: 1 / 3

Marking explanation: M1 for factorisation. M0 A0 because the answer selects the outside intervals instead of the non-positive region between the roots.

Example Y

(x−4)(x+3)≤0 gives x≤−3 or x≥4.

Proposed mark: 1 / 3

Marking explanation: M1 for correct factorisation. M0 A0 for choosing the outside intervals.

Example Z

(x−4)(x+3)≤0; upward quadratic is non-positive between roots: −3≤x≤4.

Proposed mark: 3 / 3

Marking explanation: M1 for (x − 4)(x + 3); M1 for correct sign analysis between the roots; A1 for −3 ≤ x ≤ 4. All required evidence is present in the response.

Selected task 20c

Separates a valid threshold method from correct interpretation of the first whole day.

Example X

0.92^t < 0.5 gives t > ln(0.5)/ln(0.92) = 8.31. I round to day 8.

Proposed mark: 1 / 2

Marking explanation: M1 for t > 8.31... . A0: the first integer satisfying this strict bound is 9, not rounding down to 8.

Example Y

500(0.92)^8 = 256.609..., which is about 250 litres, so day 8.

Proposed mark: 0 / 2

Marking explanation: M0 A0. Day 8 still has more than 250 litres. The response neither establishes the crossing nor identifies day 9.

Example Z

Solve .92^t<.5: t>ln(.5)/ln(.92)=8.31, first whole day 9.

Proposed mark: 2 / 2

Marking explanation: M1 for the logarithmic bound t > 8.31... or equivalent valid threshold comparison; A1 for the first whole day 9. All required evidence is present in the response.