IQM3004 A1 Teacher reference commentary

IQM3004 Mathematics Assessment 1 Paper 1

Selected synthetic examples for teacher standardisation. Review before distribution.

Use the approved question paper and marking guidance alongside these extracts. Consult this proposed commentary after independent marking. Partial excerpts cannot establish a whole-script or whole-portfolio mark.

Selected task A6 a

Distinguish choosing a valid test value from recognising why it disproves a universal claim.

Example X

n=10 gives 121, which is prime

Reference commentary: 1/2. Valid choice n=10 earns B1; calling 121 prime fails the composite/counterexample point.

Example Y

n=10 gives 121, so prime

Reference commentary: 1/2. Valid n 10 earns B1;121 is incorrectly classified prime.

Example Z

n=10 gives $121=11^2$, composite

Reference commentary: 2/2. Award 2/2. Evidence: n=10 gives $121=11^2$, composite This meets the item-specific allocation; valid exact equivalents and implied methods are credited under the general principles.

Selected task B1 e

Both the horizontal substitution and the image point must match the translation.

Example X

y=f(x+2)-3; (-2,9)

Reference commentary: 0/2. Translation direction and image point are both wrong.

Example Y

y=f(x+2)+3; (-2,15)

Reference commentary: 0/2. Both graph equation and image point wrong.

Example Z

y=f(x-2)-3; (0,12) maps to (2,9)

Reference commentary: 2/2. Award 2/2. Evidence: y=f(x-2)-3; (0,12) maps to (2,9) This meets the item-specific allocation; valid exact equivalents and implied methods are credited under the general principles.

Selected task B3 f

Separate positive-area reasoning, integration method and final accuracy.

Example X

Area = integral from -2 to 2 of $(4-x^2)$ dx. $[4x-x^3/3]$ gives 16/3 square units.

Reference commentary: 2/3. Correct positive integrand and antiderivative/limits earn two method marks; arithmetic result wrong.

Example Y

Signed integral [$x^3/3-4x$] from −2 to 2 = −32/3. I report area −32/3.

Reference commentary: 1/3. Correct antiderivative/limits earns one integration method mark; no conversion to positive area, final answer wrong.

Example Z

Area = integral from −2 to 2 of $(4-x^2)\,dx$ = [$4x-x^3/3$] from −2 to 2 = 16/3−(−16/3)=32/3 square units.

Reference commentary: 3/3. Award 3/3. Evidence: Area = integral from −2 to 2 of $(4-x^2)\,dx$ = [$4x-x^3/3$] from −2 to 2 = 16/3−(−16/3)=32/3 square units. This meets the item-specific allocation; valid exact equivalents and implied methods are credited under the general principles.