
GCSE Mathematics

Graph Transformations

Mark Scheme - Higher Tier | Grades 8-9

M = method mark, A = accuracy mark (dependent on the preceding M mark), B = independent mark.

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Edexcel-style questions

Q1 Grade 8 Edexcel style

Total: 2

Part	Mark scheme	Marks
(a)	recognises this as a translation	M1
(a)	translation by the vector (0, 5)	A1

Q2 Grade 8 Edexcel style

Total: 2

Part	Mark scheme	Marks
(a)	adds 4 to the y-coordinate	M1
(a)	(3, 9)	A1

Q3 Grade 8 Edexcel style

Total: 2

Part	Mark scheme	Marks
(a)	reflects the y-coordinate in the x-axis	M1
(a)	(3, -5)	A1

Q4 Grade 9 Edexcel style

Total: 2

Part	Mark scheme	Marks
(a)	substitutes $(x - 2)$ for x in $f(x)$	M1
(a)	$y = x^2 - 8x + 13$	A1

Q5 Grade 9 Edexcel style

Total: 2

Part	Mark scheme	Marks
(a)	multiplies every term of $f(x)$ by -1	M1
(a)	$y = -x^2 + 3x - 2$	A1

AQA-style questions

Q6 Grade 8 AQA style

Total: 2

Part	Mark scheme	Marks
(a)	recognises this as a translation	M1
(a)	translation by the vector (3, 0)	A1

Q7 Grade 8 AQA style

Total: 2

Part	Mark scheme	Marks
(a)	subtracts 6 from the y-coordinate	M1
(a)	(-2, 1)	A1

Q8 Grade 9 AQA style

Total: 2

Part	Mark scheme	Marks
(a)	reflects the x-coordinate in the y-axis	M1
(a)	(2, 7)	A1

Q9 Grade 9 AQA style

Total: 2

Part	Mark scheme	Marks
(a)	substitutes $(x + 1)$ for x in $f(x)$	M1
(a)	$y = x^2 + 4x$	A1

Q10 Grade 9 AQA style

Total: 2

Part	Mark scheme	Marks
(a)	multiplies every term of $f(x)$ by -1	M1
(a)	$y = -x^2 - 5x + 1$	A1

OCR-style questions

Q11 Grade 8 OCR style

Total: 2

Part	Mark scheme	Marks
(a)	recognises this as a translation	M1
(a)	translation by the vector (0, -4)	A1

Q12 Grade 8 OCR style

Total: 2

Part	Mark scheme	Marks
(a)	adds 3 to the x-coordinate	M1
(a)	(7, -1)	A1

Q13 Grade 8 OCR style

Total: 2

Part	Mark scheme	Marks
(a)	reflects the y-coordinate in the x-axis	M1
(a)	(4, 6)	A1

Q14 Grade 9 OCR style

Total: 2

Part	Mark scheme	Marks
(a)	substitutes (x - 3) for x in f(x)	M1
(a)	$y = x^2 - 8x + 10$	A1

Q15 Grade 9 OCR style

Total: 2

Part	Mark scheme	Marks
(a)	multiplies every term of f(x) by 2	M1
(a)	$y = 2x^2 - 2x - 12$	A1

Teachably-style questions

Q16 Grade 8 Teachably style

Total: 2

Part	Mark scheme	Marks
(a)	recognises this as a translation	M1
(a)	translation by the vector $(-2, 0)$	A1

Q17 Grade 8 Teachably style

Total: 2

Part	Mark scheme	Marks
(a)	subtracts 4 from the x-coordinate	M1
(a)	$(-9, 2)$	A1

Q18 Grade 9 Teachably style

Total: 2

Part	Mark scheme	Marks
(a)	reflects the x-coordinate in the y-axis	M1
(a)	$(3, -4)$	A1

Q19 Grade 9 Teachably style

Total: 2

Part	Mark scheme	Marks
(a)	substitutes $(x + 2)$ for x in $f(x)$	M1
(a)	$y = x^2 + 7x + 12$	A1

Q20 Grade 9 Teachably style

Total: 2

Part	Mark scheme	Marks
(a)	multiplies every term of $f(x)$ by 3	M1
(a)	$y = 3x^2 + 12x - 9$	A1

END OF PAPER

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