

Functions Past Paper Answers GCSE Edexcel - Calculator

1.

Question	Answer	Mark	Mark scheme	Additional guidance
(a)	1.56	B1	1.56 to 1.563	
(b)	3.63	M1	for a complete method to find $fg(34)$ eg $4 \sin 65(=3.625..)$ or $fg(x)$ eg $4 \sin (2x-3)$	If an answer in the range is seen in working and then incorrectly rounded award full marks.
		A1	for answer in the range 3.6 to 3.63	
(c)	Statement	C1	for statement eg positive and negative square root required. Acceptable examples The other answer is -9 The quadratic should have 2 solutions. Not acceptable examples He has not expanded the brackets. He needed to $(x+4)$ twice as there is a squared sign. $(x+4)^2$ is 16 not 25. Didn't expand the bracket.	

2.

(a)	$\frac{2}{25}$	B1	accept 0.08	All powers and products must be evaluated
(b)	$\frac{1}{8}$	M1	$fg(x) = \frac{2}{(4x^3)^2}$ oe or $g(1) = 4$ or $\frac{2}{(4 \times 1^3)^2}$ oe	
		A1	oe	

3.

	7, -1	P1	for strategy to use $g(3) = 20$, e.g. $3a + b = 20$
		P1	for $g(1) = a + b$
		P1	for a process to find inverse of f. e.g. $f^{-1}(x) = \frac{x-3}{5}$ or $f^{-1}(33) = 6$
		P1	for using $f^{-1}(33) = g(1)$ to find an equation e.g. $\frac{33-3}{5} = a + b$
		A1	for $a = 7, b = -1$

4.

(a)		18	B1	cao
(b)		$5(x - 1)$	M1	for method to find inverse function
			A1	for $5(x - 1)$ or $5x - 5$
(c)		$9x - 48$ shown	M1	for method to find composite function
			A1	for working leading to $9x - 48$

5.

	$3x^2 + 10x$	M1 M1 A1	start a chain of reasoning, eg. $3(x+2)^2 - 2(x+2) - 8$ continue chain by expanding brackets correctly, eg. $3x^2 + 12x + 12 - 2x - 4 - 8$ for $3x^2 + 10x$ ($a = 3, b = 10$)
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6.

(a)		$\frac{x+1}{4}$	M1 A1	start to method eg. $y = 4x - 1$ or $x = \frac{y+1}{4}$ oe
(b)		$\frac{13}{16}$	P1 A1	for start to process eg. $f(4k) = 16k - 1$ or $g(2) = \frac{12+1}{4}$

7.

$(x+3)^2 - 3^2$ or $(x+3)^2 - 9$ or $(y+3)^2 - 3^2$ or $(y+3)^2 - 9$			M1	for completing the square
$y+9 = (x+3)^2$ or $x+9 = (y+3)^2$			M1	
$\sqrt{y+9} = x+3$ or $\sqrt{x+9} = y+3$			M1	
	$-3 + \sqrt{x+9}$	4	A1	oe M3A0 for $-3 + \sqrt{y+9}$ and for $-3 \pm \sqrt{x+9}$

8.

(a)		-11	1	B1	
(b)		0.5 oe	1	B1	
(c)	$g(-1.5) = 1 \div (1 - 2 \times -1.5) (=0.25)$ or $fg(x) = 4 - 3 \times \left(\frac{1}{1-2x}\right)$ oe			M1	$g(-1.5)$ must be the correct calculation alone.
		3.25 oe	2	A1	

