

FunctionsAnswers

2019 P2 Q8	$(a) f^{-1}(x) = (x - 8)^3$ $(b) 9 \leq x \leq 18, x \in R$
2019 P1 Q12	$(a) \frac{1}{\sqrt{5-x}}$ $(b) x \geq 5$
2018 P1 Q2	$g^{-1}(x) = 5(x + 4)$
2018 P2 Q6	$(a) (i) 3 + \cos 2x$ $(ii) 2(3 + \cos x)$
2017 P1 Q1	$(a) 10$ $(b) 2\cos 5x$
2017 P1 Q6	$h^{-1}(x) = \sqrt[3]{x-7} \text{ or }$ $h^{-1}(x) = (x-7)^{\frac{1}{3}}$
2016 P1 Q12	$(a) \text{ Proof}$ $(b) h(x) = 2(x - 2)^2 + 3$
2016 P1 Q6	$(a) \frac{x-5}{3}$ $(b) 2$
2015 P1 Q5	$(a) g^{-1}(x) = \frac{6-x}{2} \text{ or } 3 - \frac{x}{2} \text{ or } \frac{x-6}{-2}$ $(b) x$
2015 P2 Q2	$(a) 10 + (1 + x)(3 - x) + 2$ $(b) 15 + 2x - x^2 \text{ or } -x^2 + 2x + 15$ $(c) 5 \text{ \& } -3$

2014 P2 Q3	(a) $\bullet^1 f(x+3)$ stated or implied by $\bullet^2$ $\bullet^2 = (x+3)(x+2)+q$ OR $= (x+3)^2 - (x+3) + q$ (b) $q = \frac{1}{4}$
2012 P2 Q1	(a) $\bullet^1$ e.g. $f(x+4)$ $\bullet^2 (x+4)^2 + 3$ $\bullet^3 x^2 + 3 + 4$ (b) $\bullet^4 2x^2 + 8x + 26$ $\bullet^5 8^2 - 4 \times 2 \times 26$ or $4^2 - 4 \times 1 \times 13$ stated, or implied by $\bullet^6$ $\bullet^6 -144 < 0$ or $-36 < 0$ so no real roots
2011 P2 Q2	(a) $\bullet^1 g(x^3 - 1)$ (c) $(x-1)(3x+1)(x+2)$ $\bullet^2 3(x^3 - 1) + 1$ (d) $-2, -\frac{1}{3}$ and 1 (b) $3(x^3 - 1) + 1 + x(4x - 5)$ $= 3x^3 + 4x^2 - 5x - 2$
2009 P2 Q2	(a) $f(x^2 - 2)$ $3(x^2 - 2) + 1$ $(3x + 1)^2 - 2$ (b) $x = -\frac{1}{2}$
2008 P1 Q23	(a) $h(f(x)) = \log_2(x^2 - x + 10)$ $h(g(x)) = \log_2(5 - x)$
2007 P1 Q3	(a) $g(f(x)) = -2x^2 - 1$ (b) $g(g(x)) = 4x - 1$
2006 P1 Q3	(a) $f(g(x)) = 2(2x - 3) + 3$ $g(f(x)) = 2(2x + 3) - 3$ (b) $16x^2 - 9$ minimum value $= -9$

2005 P1 Q4	(a) $(3x - 1)^2 + 7$ (b) (i) $\left(\frac{1}{3}, 7\right)$ (ii) $y \geq 7$
2003 P1 Q9	(a) $\frac{1}{2x-1}$ (b) $x \neq \frac{1}{2}$
2002W P1 Q9	(a) $\frac{3(x+1)}{x+4}$ (b) $x \neq -4$
2002 P1 Q3	(a) (i) $\sin(2x^\circ)$ (ii) $2 \sin(x^\circ)$
2001 P1 Q7	(a) (i) $\sin\left(x + \frac{\pi}{4}\right);$ (ii) $\cos\left(x + \frac{\pi}{4}\right)$
2000 P2 Q3	(a) $3 - \frac{3}{x}$ (b) x
Spec 2 P1 Q8	(a) $f(g(x)) = x^2 - 1, g(f(x)) = (x - 1)^2$