	Function Notation	
1	A function is defined as $f(x) = 11 - 6x$ Given that $f(a) = 8$, calculate a	2
2	A function is defined as $f(x) = 5 - 3x$ Given that $f(a) = 20$, calculate a	2
5	A function is defined as $f(x) = 7 + \frac{2}{3}x$ Given that $f(a) = 15$, calculate a	2
4	Given that $f(x) = 5 - 3x$, (a) evaluate $x = -1$ (b) find b given that $f(b) = 11$	3
	9 marks	

	Using the discriminant	
5	Determine the nature of the roots of the function $f(x) = 4x^2 + 5x - 1$	2
6	Determine the nature of the roots of the function $f(x) = 4x^2 + 3x + 1$	2
7	Determine the nature of the roots of the function $f(x) = 9x^2 - 6x + 1$	2
8	Determine the nature of the roots of the function $f(x) = 6 + 7x - x^2$	2
	8 marks	

	Answers		
1	Mark 1 know to substitute into the function Mark 2 Find a value for b	$8 = 11 - 6a$ $-3 = -6a,\ \ \boldsymbol{a = \frac{1}{2}}$	2
2	Mark 1 know to substitute into the function Mark 2 find a value for a	$20 = 5 - 3a$ $15 = -3a,\ \ \boldsymbol{a = -5}$	2
5	Mark 1 know to substitute into the function Mark 2 find a value for a	$15 = 7 + \frac{2}{3}a$ $8 = \frac{2}{3}a,\ \ \boldsymbol{a = 12}$	2
4	Mark 1 Using $x = -1$, evaluate $f(x)$ Mark 2 Know to substitute into the function Mark 3 Find a value for b	$f(x) = 5 - 3(-1) = 8$ $11 = 5 - 3b$ $6 = -3b,\ \ \boldsymbol{b = -2}$	3
5	Mark 1 find discriminant Mark 2 state nature of roots If the discriminant is incorrect, the second mark can still be given for a correct statement. • $b^2 - 4ac = 0$, two equal real roots or one repeated real root. • $b^2 - 4ac < 0$, no real roots.	$41 \quad [5^2 - 4 \times 4 \times (-1)]$ **two real and distinct roots**	2
6	Mark 1 find discriminant Mark 2 state nature of roots If the discriminant is incorrect, the second mark can still be given for a correct statement. • $b^2 - 4ac > 0$, two real and distinct roots. • $b^2 - 4ac = 0$, two equal real roots or one repeated real root.	$-7 \quad [3^2 - 4 \times 4 \times (1)]$ **no real roots**	2
7	Mark 1 find discriminant Mark 2 state nature of roots If the discriminant is incorrect, the second mark can still be given for a correct statement. • $b^2 - 4ac > 0$, two real and distinct roots. • $b^2 - 4ac < 0$, no real roots.	$0 \quad [(-6)^2 - 4 \times 9 \times (1)]$ **two real, equal roots or one repeated real root**	2
8	Mark 1 find discriminant Mark 2 state nature of roots If the discriminant is incorrect, the second mark can still be given for a correct statement. • $b^2 - 4ac = 0$, two equal real roots or one repeated real root. • $b^2 - 4ac < 0$, no real roots.	$73 \quad [7^2 - 4 \times (-1) \times 6]$ **two real and distinct roots**	2