4. Solve the equation





giving your answer to 3 significant figures.

(3)

Q4

(Total 3 marks)



5. Given that a and b are positive constants, solve the simultaneous equations

$$a = 3b$$
,

$$\log_3 a + \log_3 b = 2.$$

Give your answers as exact numbers.

(6)

Given that $0 < x < 4$ and find the value of $x$ .	$\log_5(4-x) - 2\log_5 x = 1,$	(6)
		11.
	and the second s	

(a) Find the	alua of a such that	
(a) Find the va	alue of y such that	
	$\log_2 y = -3$	
		(2)
(b) Find the va	alues of x such that	
	log 22 + log 16	
	$\frac{\log_2 32 + \log_2 16}{\log_2 x} = \log_2 x$	
	1762	(5)
	*	(5)
		оосососос
		***************************************
		от поставления и поста
		_
		•

Leave
blank

5.	(a)	Find	the	positive	value	of $x$	such	that
----	-----	------	-----	----------	-------	--------	------	------

$$\log_x 64 = 2$$

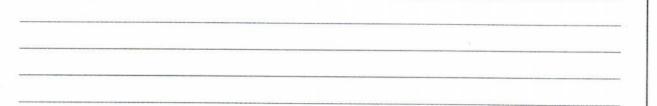
(2)

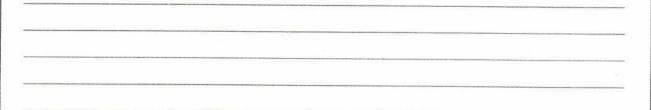
(b) Solve for 
$$x$$

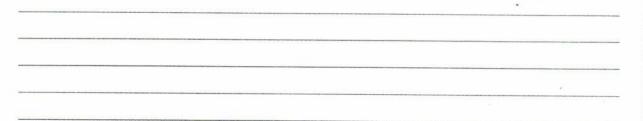
$$\log_2(11 - 6x) = 2\log_2(x - 1) + 3$$

(6)

***************************************		







Leave blank

8. (a) Sketch the graph of  $y = 7^x$ ,  $x \in \mathbb{R}$ , showing the coordinates of any points at which the graph crosses the axes.

(2)

(b) Solve the equation

$$7^{2x} - 4(7^x) + 3 = 0$$

giving your answers to 2 decimal places where appropriate.

(6)

- 4. Given that  $y = 3x^2$ ,
  - (a) show that  $\log_3 y = 1 + 2\log_3 x$

(3)

(b) Hence, or otherwise, solve the equation

$$1 + 2\log_3 x = \log_3(28x - 9)$$

(3)

. (a) Find, to 3 significant figures, the value of x for which $5^x = 7$ .		
(b) Solve the equation $5^{2x} - 12(5^x) + 35 = 0$ .	(4)	
*		

7. (a) Given that

$$2\log_3(x-5) - \log_3(2x-13) = 1$$
,

show that  $x^2 - 16x + 64 = 0$ .

(5)

(b) Hence, or otherwise, solve  $2\log_3(x-5) - \log_3(2x-13) = 1$ .

(2)


		*
	Autorities and the state of the	



	(1)
(ii) Express $2 \log_a 3 + \log_a 11$ as a single logarithm to base a.	(3)
	(0)
	ere de mar
THE CONTROL OF THE CONTROL OF THE STREET OF	



6.	(a)	Find, to 3	significant	figures,	the value	of $x$	for which	$8^x = 0.8$
----	-----	------------	-------------	----------	-----------	--------	-----------	-------------

(2)

(b) Solve the equation

$$2\log_3 x - \log_3 7x = 1.$$

(4)


3. Find, giving your answer to 3 significant figures where appropriate, the value of x for which

(a)  $5^x = 10$ ,

**(2)** 

(b)  $\log_3(x-2) = -1$ .

(2)

	8		
*			
			•
		40	

6

Leave blank

	$2\log_3 x - \log_3(x)$	(x-2)=2		(:
		•		
	and the second s	. 41		
	•	•		
	·			
		,		
		*		
4				
		at .		11
•				
	4			
	antila vivia markharamenanakenakenakenakenakenakenakenakenaken			
			<b>,</b>	

Leave blank

-	a.	
6.	Given	that
U.	OIVCII	ulai

$$2\log_2(x+15) - \log_2 x = 6$$

$$x^2 - 34x + 225 = 0$$

(5)

$$2\log_2(x+15) - \log_2 x = 6$$

(2)

•

(2)

(4)

		CZ MAY 20	13
3.		$f(x) = 2x^3 - 5x^2 + ax + 18$	
	where $a$ is a constant.		
	Given that $(x-3)$ is a factor of	f(x),	
	(a) show that $a = -9$		
	(b) factorise f(x) completely.		
	Given that		
	g(y) =	$= 2(3^{3y}) - 5(3^{2y}) - 9(3^y) + 18$	

(c) find the values of y that satisfy g(y) = 0, giving your answers to 2 decimal places where appropriate.

(3)

Leave blank 7. (i) Find the exact value of x for which  $\log_2(2x) = \log_2(5x + 4) - 3$ (4) (ii) Given that  $\log_a y + 3\log_a 2 = 5$ express *y* in terms of *a*. Give your answer in its simplest form. (3)