MATH 5.1EL Assignment 2 (More About Equations)

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Answer the questions in the spaces provided on the question sheets. If you do not know how to answer a certain question, write down where you get stuck. Answers can be corrected to 3 significant figures if necessary.

	ne, class, class no.:	
Tut	or's name:	
1.	(a) Solve the quadratic equation $x^2 - 4x - 5 = 0$.	
	(b) Find the coordinate of vertex of $y = x^2 - 4x - 5$ by completing square.	
	(c) State whether the quadratic function open upwards or downwards. Hence, sketch the graph $y=x^2-4x-5$	of
	(d) Hence, solve the inequality $x^2 - 4x - 5 \ge 0$ and represent the solutions on a number line.	

2	2. Solve the following quadratic inec	qualities.	
	(a) $x^2 + 3x - 18 \ge 0$ (b) $x(1-x) \le -5$ (c) $(x+3)(x+1) \ge -1$	(d) $x^2 - 6x \le -9$ (e) $x^2 - 6x < -9$ (f) $2x(x+6) \ge (3x+2)(x+2)$	(g) $x^2 - 4 \ge 0$
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3. Solve $x^2 - 2x - 2 > 0$ by using compound inequalities	
4. Solve $x^2 + 3x - 10 > 0$ by using the tabulation method .	
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5. Solve the following equations by completing the square				
(a) $x^2 - 8x + 20 < 0$	(b) $-x^2 + 10x - 28 \le 0$			
6. Let also a constant Columbia inequality of	4m + 2 + 4 < 0 in terms of s			
6. Let c be a constant. Solve the inequality x^2 –	4x-c+4<0 in terms of c.			

(a) two distinct real roots	ic equation in x : $x^2 + kx + (k^2 - 3) = 0$ has		
(a) two distinct real roots	(b) no real roots		
If $x^2 - (2k+1)x + 2k + 1$ is always posit	ive for all real values of x , find the range of values of k .		

) Can the value of k be greater than 0?. Explain your answer.
(ł) Find the range of possible values of k .
(8) Solve the inequality $x^2 + 5x - 50 \ge 0$
) Solve the inequality $x^2+5x-50\geq 0$) Let n be a positive integer. Find the smallest value of n such that $4^n+5(2^n)-50\geq 0$

11.	` /		d the range of values of k such that the quadratic equation $x^2 + kx - 2k - 1$ has real roots. is an integer greater than 10 and satisfying the inequality in (a), solve the equation $x^2 + kx - 2k - 1$
	(D)		If an integer greater than 10 and satisfying the inequality in (a), solve the equation $x^2 + kx - 1 = 0$ for the smallest possible value of k .
12.	n th	ey c ıal i	nion company, the research find that the annual income $A(n)$ depends on the number of stores opened. It is given that $A(n) = ab^n$ where a and b are positive constants. From the record, the number is 2420000 dollars when they have 1 store. The annual income is 3543122 when they have
	(a)		Find a and b
	(1.)		Hence, find the annual income when they had 4 stores. $G(x) = \frac{1}{2} \left(\frac{1}{2} \right)^{2}$
	(b)		The annual cost $C(n)$ of operating n stores is modeled by $C(n) = 1.5a(1.1)^n$ A company staff said that the company was losing money every year when they had one store.
			Is it true? Explain your answer.
			Write down the total profit of the company in terms of n .
		1V.	At least how many stores does the company open to achieve the annual profits at 14000000 dollars?

13.	(a) Solve the inequality $9x^2 + 15x - 50 \ge 0$
	(b) Let n be a positive integer. Find the smallest value of n such that $50(0.81^n) + 15(0.9^n) - 9 > 0$

		ab + 3b			
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5. Find the	e range of k for	which $2kx^2 - (4k^2 + 4k^2 +$	$(x+8)x + (k+\frac{17}{k})$	< 0	