Student Activity 5(iii)



Plot the following graphs using the same axes and scales where $x \in \{-3, -2, -1, 0, 1, 2, 3\}$ (Use the "Table" mode on the calculator and verify the y values you calculate - optional) How does the graph of $y = x^3$ compare with the graph of $y = x^2$?

(i) $y = x^3$	(iii) $y = (x-2)^3$
(ii) $y = (x+2)^3$	Investigate the graph of a similar cubic function

x	$y = x^3$	$y = (x+2)^3$	$y = (x-2)^3$	
-3				
-2				
-1				
0				
1				
2				
3				

		30				
		28	·	- +	-i	+
I	1	26	I. I.	1	1	1 I
		24		- <u>-</u>		
						4
		22		- +		+
i i	i.	20	1	l.	1	1
		18		- <u>-</u>		7
			!		-!	4
		16		- +		+
i i	i	14	i i	i	i.	i i
		12		- <u>-</u>		
			!		-!	4
		10		- +		
		8			- i	i i
				- <u>-</u>		7
	- <u>-</u>	6	!		-!	4
		4		- +		
		2				1 1
						1
	_	0		_	_	÷
-4 -3	-2	0 -1 -2	01	2	_3	4
			01	2	3	4
4		0 -12 -4	01	2 2	3	4
		0 -1 -2 -4 -6		2	3	4
-4 -3	2	-4 -6 -8	01 	2 	3	4
-4 -3		-4 -6 -8 -10	• • • • • • • • • • • • • • • • • • •	- + 2	3	4
-43		-4 -6 -8 -10	01 	- + 2	3	4
-4 -3		-4 -6 -8 -10 -12		- + 2	3 	4
-4 -3	2	-4 -6 -8 -10 -12 -14		- + 2		4
-4 -3	-2	-4 -6 -8 -10 -12 -14 -16		- + 2	3	4
-4 -3	- <u>2</u>	-4 -6 -8 -10 -12 -14 -16		2		4
		-4 -6 -8 -10 -12 -14 -16 -18		2		4
-4 -3	-2	-4 -6 -8 -10 -12 -14 -14 -16 -18 -20				4
-4 -3		-4 -6 -8 -10 -12 -14 -14 -16 -18 -20		- + 2	3	4
		-4 -6 -8 -10 -12 -14 -14 -16 -18 -20		- + 2		4
-4 -3		-4 -6 -8 -10 -12 -14 -14 -16 -18 -20				4
-4 -3		-4 -6 -8 -10 -12 -14 -16 -18 -20 -22 -24 -26				4
-4 -3		-4 -6 -8 -10 -12 -14 -16 -18 -20 -22 -24 -26				4
		-4 -6 -8 -10 -12 -14 -14 -16 -18 -20				4

(iv) What is the effect of h

on the graph of $y = (x+h)^3$?