Student Activity 5(i)

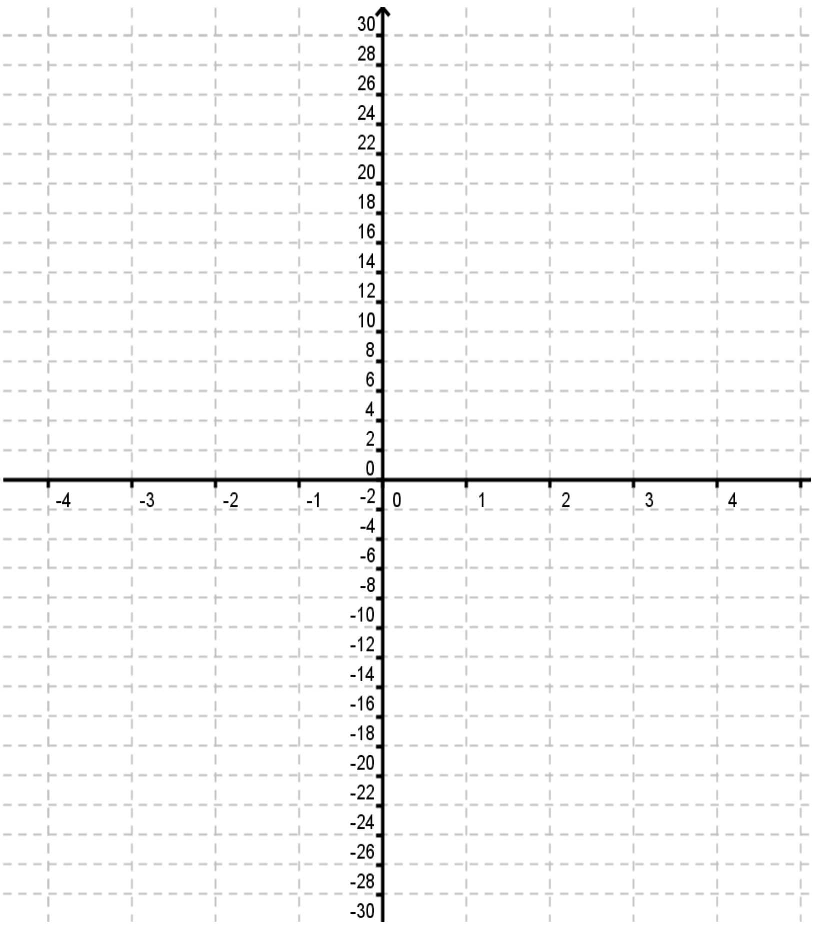
Plot the following graphs using the same axes and scales where $x \in \{-3, -2, -1, 0, 1, 2, 3\}$

(Use the "Table" mode on the calculator and verify the y values you calculate - optional)

(i) How does the graph of $y = x^3$ compare with the graph of $y = x^2$?

1. $y = x^3$	3. $y = 2x^3$
2. $y = -x^3$	4. $y = -2x^3$

x	$y = x^3$	$y = 2x^3$	$y = -x^3$	$y = -2x^3$	
-3					
-2					
-1					
0					
1					
2					
3					



(ii) How many real roots has $f(x) = x^3$? What are they?

(iii) What is the effect of the coefficient a on the graph of $y = ax^3$?

(iv) What is the effect of the sign of a on the graph of $y = ax^3$?

(vi) What transformation maps the graph of $y = x^3$ onto the graph of $y = -x^3$?

(v) For what values of x is the graph of $y = ax^3$ increasing?

(vii) What are the turning points i.e. local max and local min of $y = x^3$?