The answers

1)a)i) $f(x)=\dfrac{x^3+2x}{|x|}$

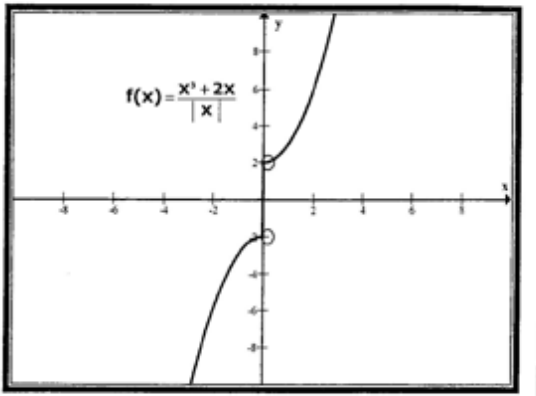
$$f(x)=\begin{cases}\dfrac{x^3+2x}{x} & : X>0\\ \dfrac{x^3+2x}{-x} & : X<0\end{cases}$$

$$f(x)=\begin{cases}\dfrac{x\left(x^2+2\right)}{x} & : X>0\\ \dfrac{x\left(x^2+2\right)}{-x} & : X<0\end{cases}$$

$$f(x)=\begin{cases}\left(x^2+2\right) & : X>0\\ -\left(x^2+2\right) & : X<0\end{cases}$$

$$f(x)=\begin{cases}x^2+2 & : X>0,\ \text{vertex}(0,2)\ \text{Up}\\ -x^2-2 & : X<0,\ \text{vertex}(0,-2)\ \text{Down}\end{cases}$$

x<0				x>0			
$f(x)=-x^2-2$ Vertex (0,-2)				$f(x)=x^2+2$ Vertex (0,2)			
x	-2	-1	0	X	0	1	2
f(x)	-6	-3	-2	f(x)	2	3	6



- Domain = R^* & • Range=R - [−2, 2]
- f is an Odd function because it`s symmetric on Origin (0,0)
- $\forall x \in \left]-\infty, o\right[$ f is an increasing
  $\forall x \in \left]o, \infty\right[$ f is an increasing