MAT1375, Classwork4, Fall2025

Ch4. Basic Functions and Transformations

1. Even Functions and Odd Functions.

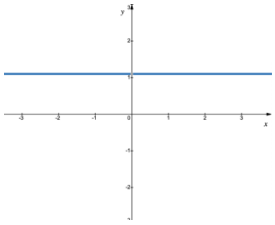
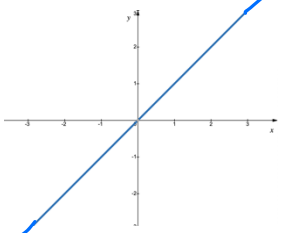
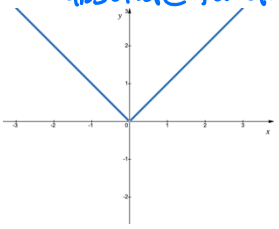
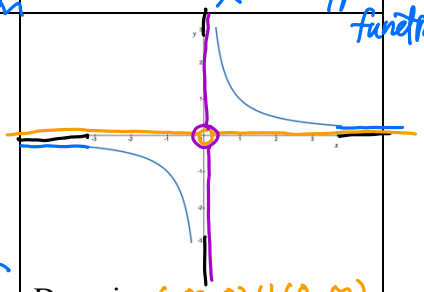
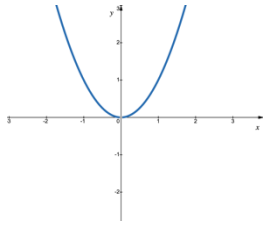
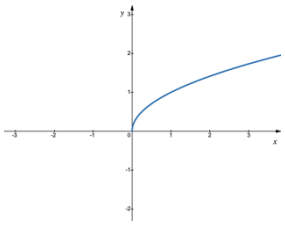
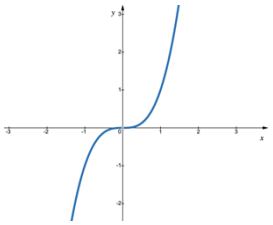
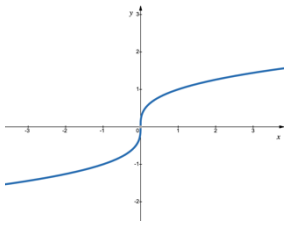
Even function: A function f is called even if $f(-a)=f(a)$ for all a.

Odd function: A function f is called odd if $f(-a)=-f(a)$ for all a.

$f(x)=x^2$, $f(a)=a^2$, $f(-a)=(-a)^2=a^2 \Rightarrow f(-a)=f(a)$

$f(x)=x^3$, $f(a)=(a)^3=a^3$, $f(-a)=(-a)^3=-a^3=-f(a)$

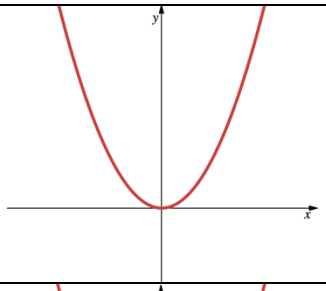
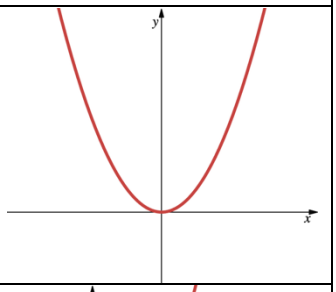
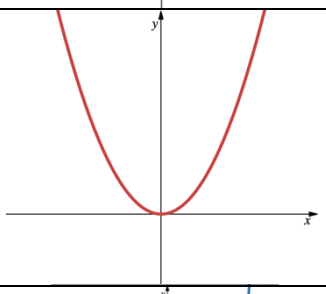
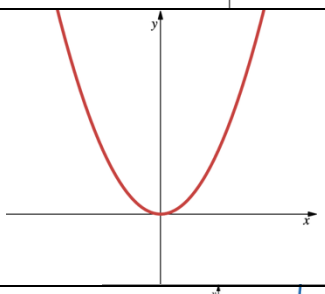
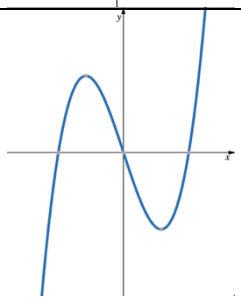
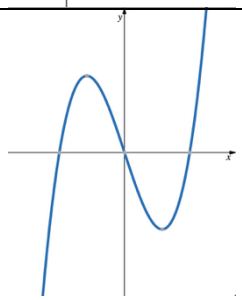
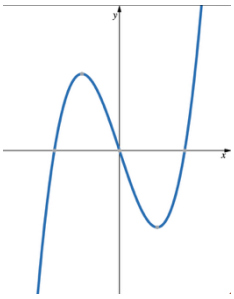
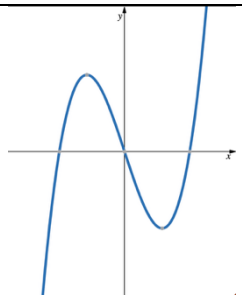
2. Complete the table of basic functions:

$f(x)=$ constant ($f(x)=c$)	$f(x)=x$	$f(x)=\lvert x\rvert$ absolute function	$f(x)=\frac{1}{x}$ hyperbolic function
			
All Real Number Domain: $\mathbb{R}$, $(-\infty,\infty)$ Range: $\{c\}$ Odd or Even $f(-a)=c=f(a)$	Domain: $(-\infty,\infty)$ Range: $(-\infty,\infty)$ Odd or Even $f(-a)=-a=-f(a)$	All Real Number Domain: $(-\infty,\infty)$ Range: $[0,\infty)$ Odd or Even $a\geq 0$ $f(-a)=\lvert -a\rvert=a=f(a)$	Domain: $(-\infty,0)\cup(0,\infty)$ Range: $(-\infty,0)\cup(0,\infty)$ Odd or Even $f(-a)=-\frac{1}{a}=-f(a)$
$f(x)=x^2$	$f(x)=\sqrt{x}$	$f(x)=x^3$	$f(x)=\sqrt[3]{x}$
			
Domain: $(-\infty,\infty)$ Range: $[0,\infty)$ Odd or Even $f(-a)=(-a)^2=a^2=f(a)$	Domain: $[0,\infty)$ Range: $[0,\infty)$ ~~Odd or Even~~ Neither	Domain: $(-\infty,\infty)$ Range: $(-\infty,\infty)$ Odd or Even $f(-a)=(a)^3=-a^3=-f(a)$	Domain: $(-\infty,\infty)$ Range: $(-\infty,\infty)$ Odd or Even $f(-a)=\sqrt[3]{-a}=-\sqrt[3]{a}=-f(a)$

3. Determine which of the following functions are even, odd, or neither.

(a) $f(x)=2x^2+x^4$ (b) $f(x)=x+3x^3$ (c) $f(x)=x^3+4x^2$

4. Complete the table

Transformation of $f(x)$	**Given $f(x)$ and then draw the transformation**	
_____ $y = f(x) + c$	$c > 0$: 	$c < 0$: 
_____ $y = f(x + c)$	$c > 0$: 	$c < 0$: 
_____ $y = cf(x)$	$c > 1$: 	$0 < c < 1$: 
_____ $y = f(cx)$	$c > 1$: 	$0 < c < 1$: 

_____ $y = -f(x)$	_____ $y = f(-x)$