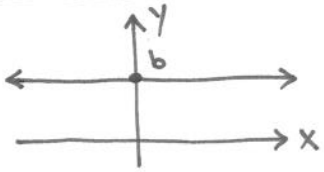
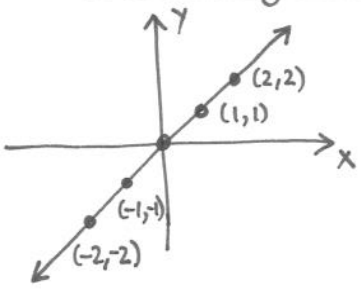
Library of Functions

① Constant Function : $f(x)=b$

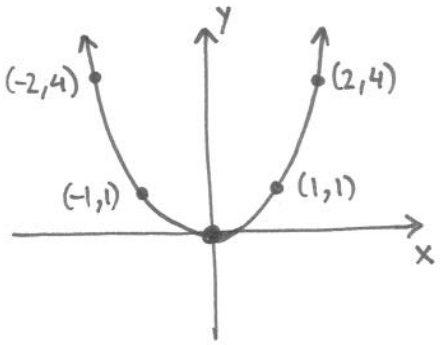


② Identity Function : $f(x)=x$



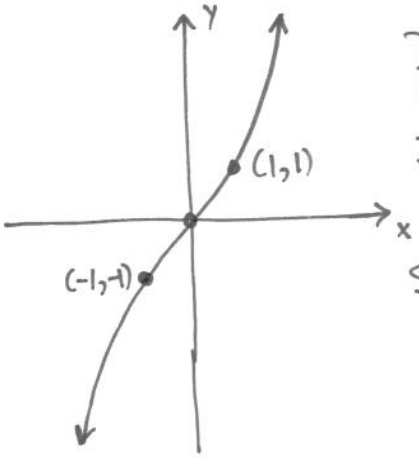
Domain: $(-\infty,\infty)$
Range: $(-\infty,\infty)$
Intercepts: $(0,0)$
Symmetry: origin
(odd function)

③ Square Function $f(x)=x^2$



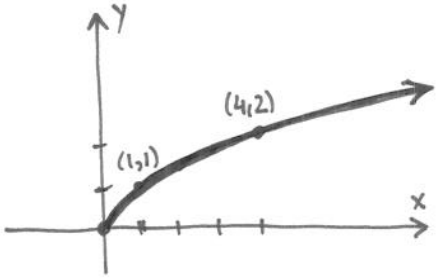
Domain: $(-\infty,\infty)$
Range: $[0,\infty)$
Intercepts: $(0,0)$
Symmetry: y-axis
(even function)

④ Cube Function $f(x)=x^3$



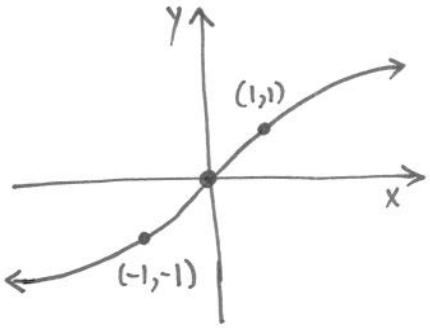
Domain: $(-\infty,\infty)$
Range: $(-\infty,\infty)$
Intercepts: $(0,0)$
Symmetry: origin
(odd function)

⑤ Square Root Function $f(x)=\sqrt{x}$



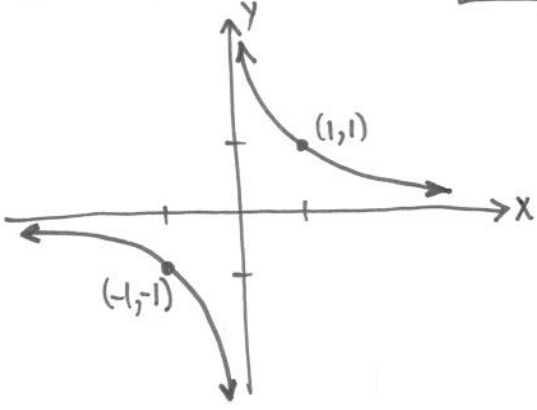
Domain: $[0,\infty)$
Range: $[0,\infty)$
Intercepts: $(0,0)$
Symmetry: none

⑥ Cube Root Function $f(x)=\sqrt[3]{x}$



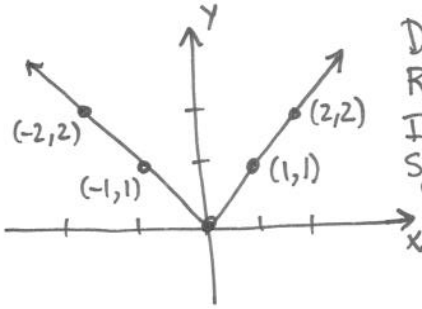
Domain: $(-\infty,\infty)$
Range: $(-\infty,\infty)$
Intercepts: $(0,0)$
Symmetry: origin
(odd function)

⑦ Reciprocal Function $f(x)=\frac{1}{x}$



Domain: $(-\infty,0)\cup(0,\infty)$
Range: $(-\infty,0)\cup(0,\infty)$
Intercepts: none
Symmetry: origin
(odd function)

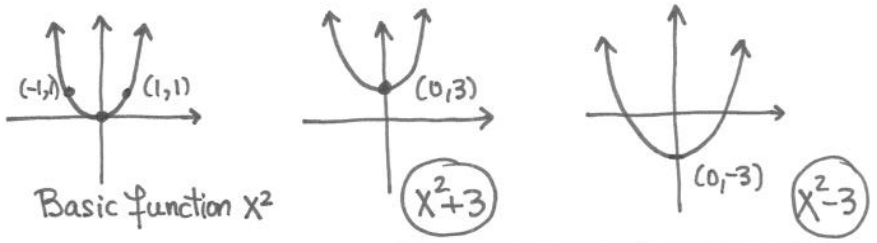
⑧ Absolute Value Function $f(x)=|x|$



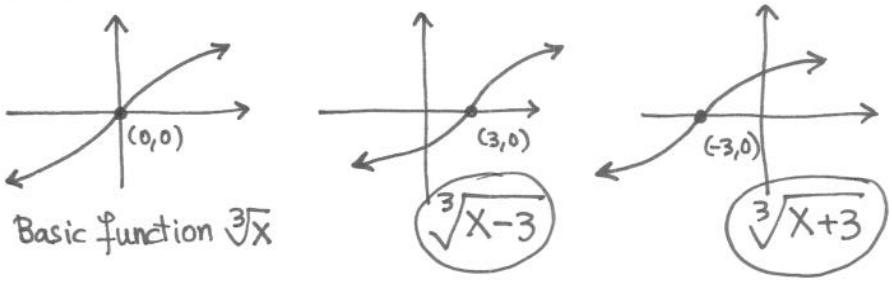
Domain: $(-\infty,\infty)$
Range: $[0,\infty)$
Intercepts: $(0,0)$
Symmetry: y-axis
(even function)

Graphing Transformations

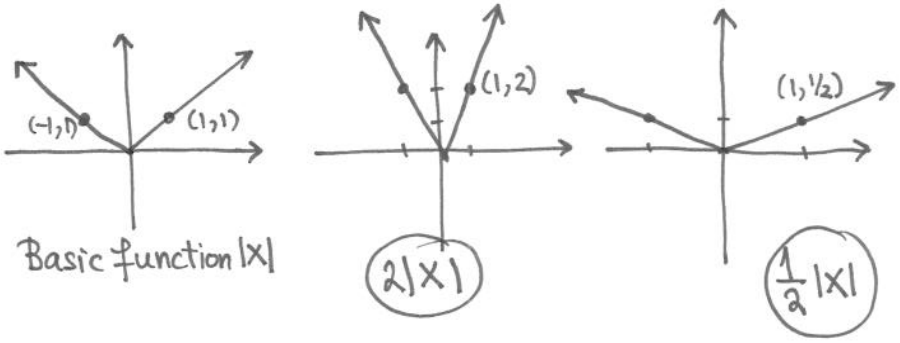
To Graph:	Graph $f(x)$ and:	Examples:
$y=f(x)+K$	Shift ↑ K units	
$y=f(x)-K$	Shift ↓ K units	



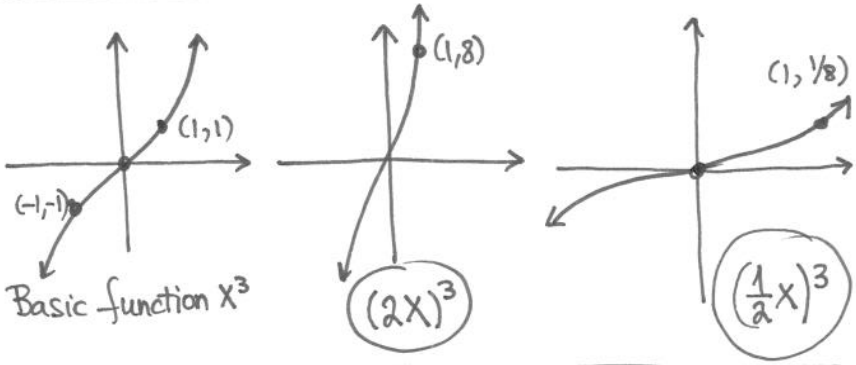
$y=f(x+K)$	Shift ← K units
$y=f(x-K)$	Shift → K units



$y=af(x)$	If $0<a<1$, vertically compress
	If $a>1$, vertically stretch



$y=f(ax)$	If $a>1$, horizontally compress
	If $0<a<1$, horizontally stretch



$y=f(-x)$	Reflect about the y-axis
$y=-f(x)$	Reflect about the x-axis