Section 2.6: Graphs of Basic Functions

Video 1

A function is **continuous** over its domain if you can sketch its graph without having to lift your pencil.

1) Draw the graph of a function that has a discontinuity at the given value(s), and state the intervals of continuity.

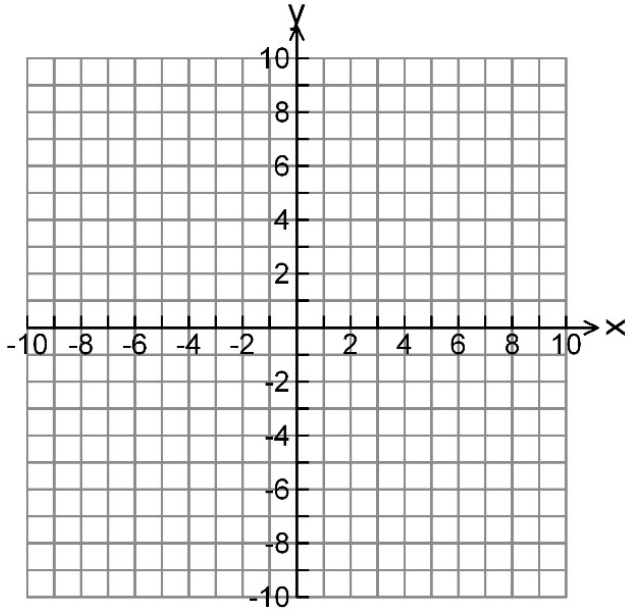
a) $x = 3$

b) $x = -1$ and $x = 5$

Video 2

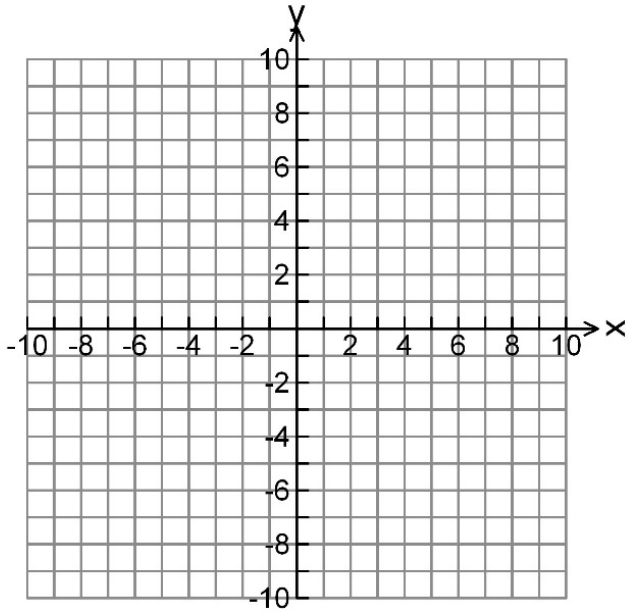
2) Graph the identity function $f(x) = x$.

x	*f(x)*
–2	
–1	
0	
1	
2	



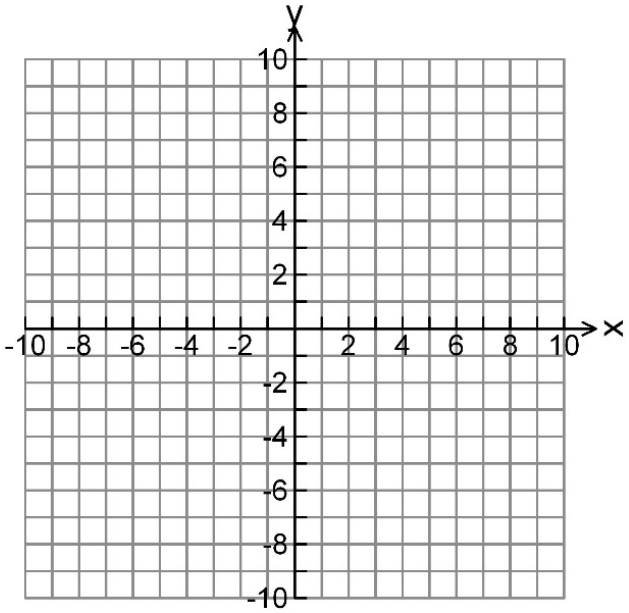
3) Graph the squaring function $f(x) = x^2$.

x	*f(x)*
–2	
–1	
0	
1	
2	



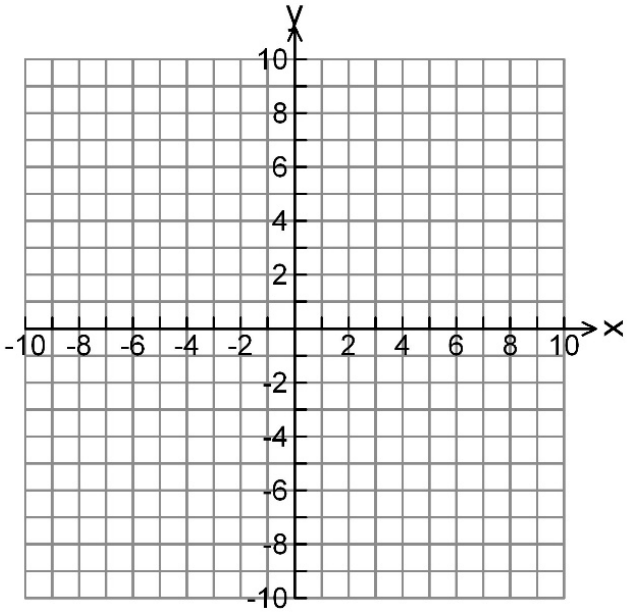
4) Graph the cubing function $f(x) = x^3$.

x	*f(x)*
–2	
–1	
0	
1	
2	



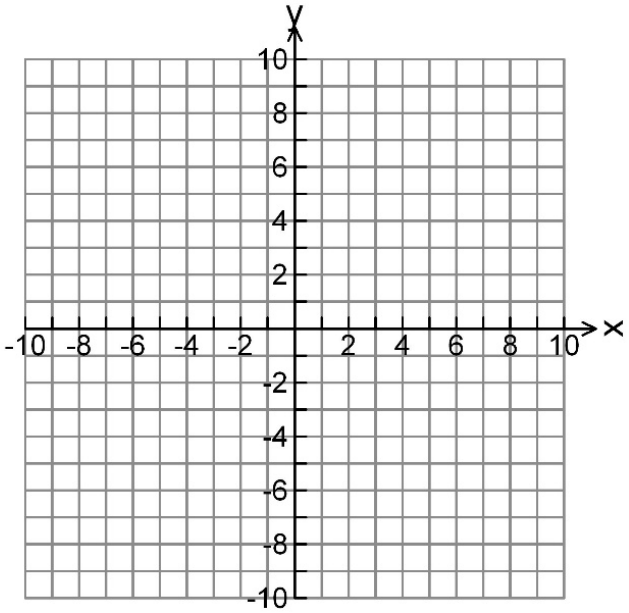
5) Graph the square root function $f(x) = \sqrt{x}$.

x	*f(x)*
0	
1	
4	
9	
16	



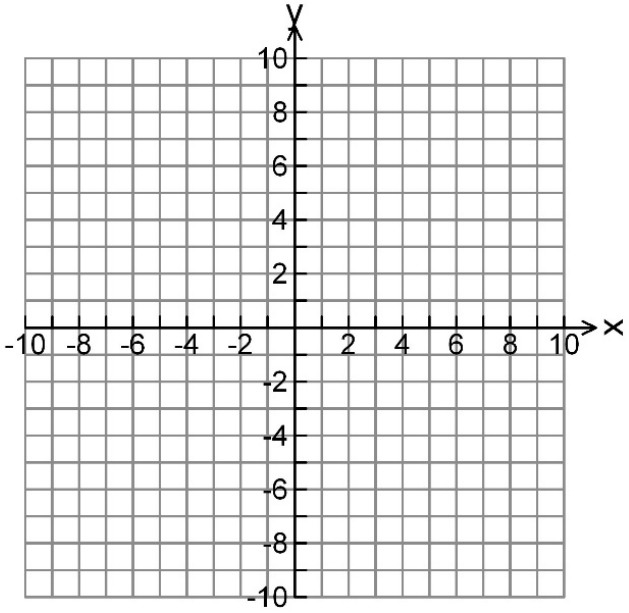
6) Graph the cube root function $f(x)=\sqrt[3]{x}$.

x	*f(x)*
–8	
–1	
0	
1	
8	



7) Graph the absolute value function $f(x)=|x|$.

x	*f(x)*
–2	
–1	
0	
1	
2	

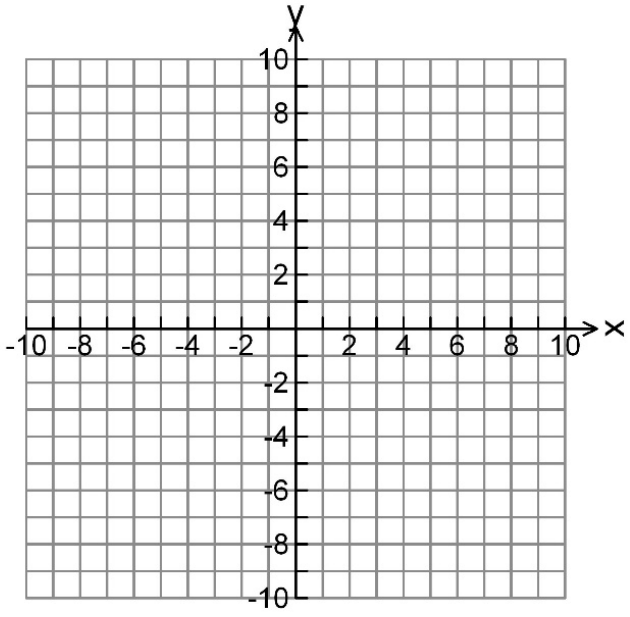


Video 3

A **piecewise** function is function that is defined by different rules over different intervals of its domain.

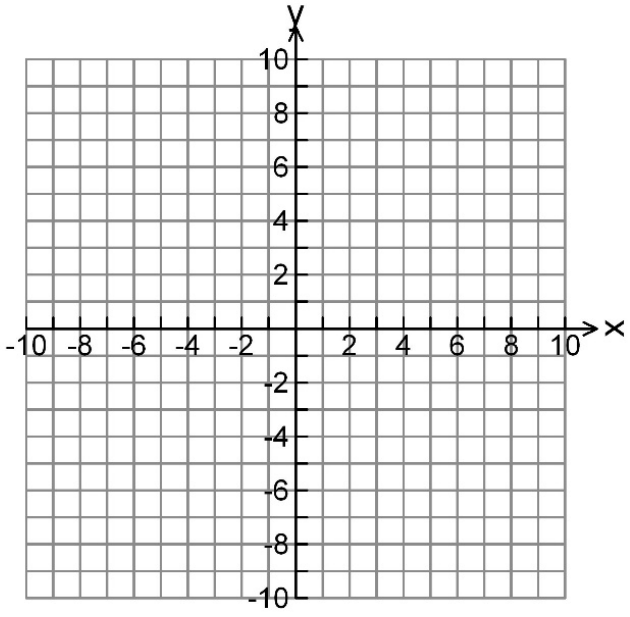
8) Graph the piecewise function.

$$f(x)=\begin{cases}-2x-4 & \text{if} \quad x<2\\ 3x+1 & \text{if} \quad x\geq 2\end{cases}$$



9) Graph the piecewise function.

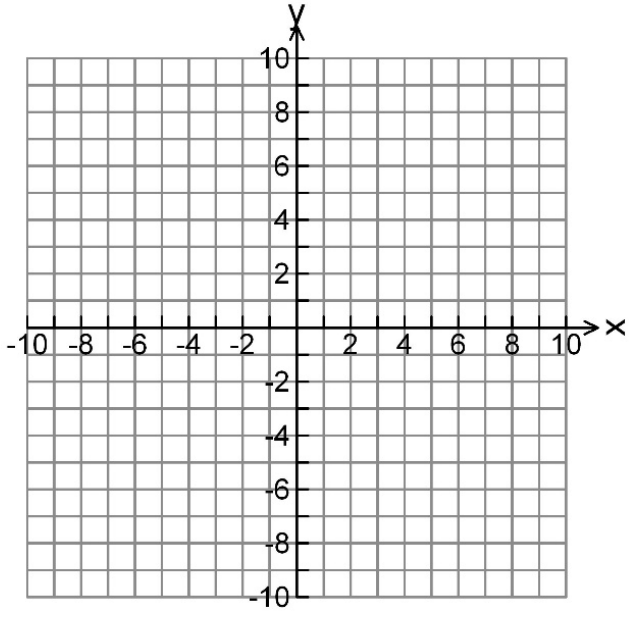
$$f(x)=\begin{cases}-x-2 & \text{if} \quad x\leq 0\\ x^2-2 & \text{if} \quad x>0\end{cases}$$



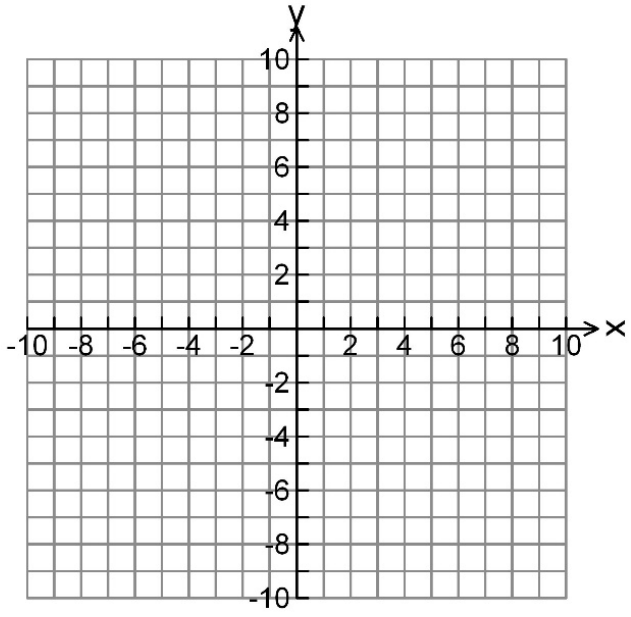
Video 4

10) Graph the greatest integer function $f(x)=[\![x]\!]$.

x	*f(x)*
–2	
–1.5	
–1	
–0.5	
0	
0.5	
1	
1.5	
2	



11) Graph $f(x)=[\![2x+1]\!]$.



Video 5

12) Graph the relation $x = y^2$.

x	y
	0
	±1
	±2
	±3