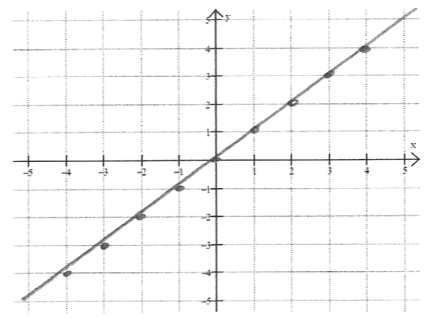


Precalculus: Basic Functions

Function: $f(x) = x$

Graph of the Parent function:

x	f(x)
-4	-4
-3	-3
-2	-2
-1	-1
0	0
1	1
2	2
3	3
4	4

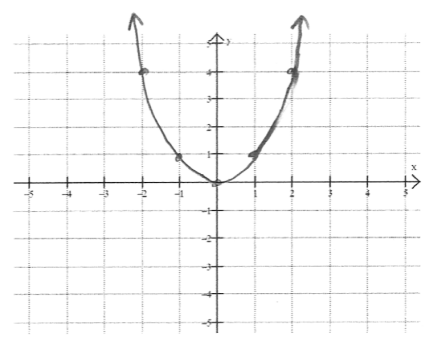


Domain: $(-\infty, \infty)$ extrema: none
 Range: $(-\infty, \infty)$ asymptotes: none
 continuity: continuous x-intercepts: 0
 boundedness: not bounded y-intercepts: 0
 increasing: $(-\infty, \infty)$ symmetry (even/odd): odd
 decreasing: never End behavior:
 $\lim_{x \rightarrow -\infty} f(x) = -\infty$ $\lim_{x \rightarrow \infty} f(x) = \infty$

Function: $f(x) = x^2$

Graph of the Parent function:

x	f(x)
-4	16
-3	9
-2	4
-1	1
0	0
1	1
2	4
3	9
4	16

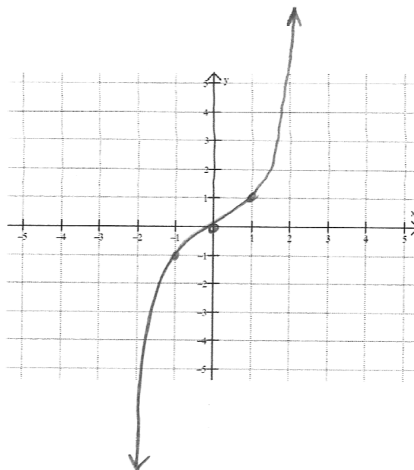


Domain: $(-\infty, \infty)$ extrema: absolute min = 0 at x = 0
 Range: $[0, \infty)$ asymptotes: none
 continuity: continuous x-intercepts: 0
 boundedness: bounded below y-intercepts: 0
 increasing: $(0, \infty)$ symmetry (even/odd): even
 decreasing: $(-\infty, 0)$ End behavior:
 $\lim_{x \rightarrow -\infty} f(x) = +\infty$ $\lim_{x \rightarrow \infty} f(x) = +\infty$

Function: $f(x) = x^3$

Graph of the Parent function:

x	f(x)
-4	-64
-3	-27
-2	-8
-1	-1
0	0
1	1
2	8
3	27
4	64



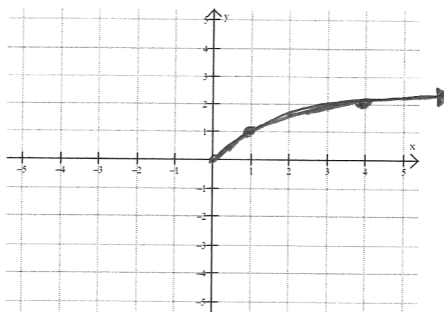
Domain: $(-\infty, \infty)$ extrema: none
 Range: $(-\infty, \infty)$ asymptotes: none
 continuity: continuous x-intercepts: 0
 boundedness: not bounded y-intercepts: 0
 increasing: $(-\infty, \infty)$ symmetry (even/odd): odd
 decreasing: never End behavior:

$\lim_{x \rightarrow -\infty} f(x) = -\infty$ $\lim_{x \rightarrow \infty} f(x) = +\infty$

Function: $f(x) = \sqrt{x}$

Graph of the Parent function:

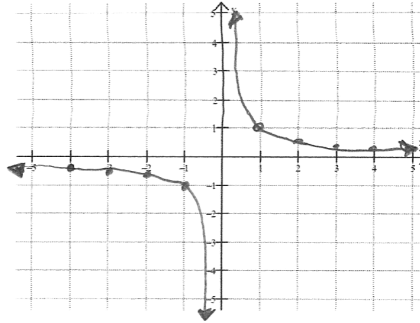
x	f(x)
-4	—
-3	—
-2	—
-1	—
0	0
1	1
2	1.4
3	1.7
4	2



Domain: $[0, \infty)$ extrema: none
 Range: $[0, \infty)$ asymptotes: none
 continuity: continuous x-intercepts: 0
 boundedness: bounded below y-intercepts: 0
 increasing: $(0, \infty)$ symmetry (even/odd): neither
 decreasing: never End behavior:

$\lim_{x \rightarrow -\infty} f(x) = \text{DNE}$ $\lim_{x \rightarrow \infty} f(x) = +\infty$
 (does not exist)

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



Graph of the Parent function:

x	$f(x)$
-4	$-\frac{1}{4}$
-3	$-\frac{1}{3}$
-2	$-\frac{1}{2}$
-1	-1
0	—
1	1
2	$\frac{1}{2}$
3	$\frac{1}{3}$
4	$\frac{1}{4}$

Domain: $(-\infty, 0) \cup (0, \infty)$ extrema: none

Range: $(-\infty, 0) \cup (0, \infty)$ asymptotes: $x=0, y=0$

continuity: infinite disc. at $x=0$ x-intercepts: none

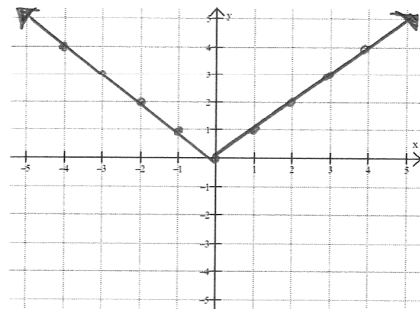
boundedness: not bounded y-intercepts: none

increasing: never symmetry (even/odd): odd

decreasing: $(-\infty, 0) \cup (0, \infty)$ End behavior:

$\lim_{x \rightarrow -\infty} f(x) = \underline{0}$ $\lim_{x \rightarrow \infty} f(x) = \underline{0}$

Function: $f(x) = |x|$



Graph of the Parent function:

x	$f(x)$
-4	4
-3	3
-2	2
-1	1
0	0
1	1
2	2
3	3
4	4

Domain: $(-\infty, \infty)$

extrema: abs. min = 0 at $x=0$

Range: $[0, \infty)$

asymptotes: none

continuity: continuous

x-intercepts: 0

boundedness: bounded below

y-intercepts: 0

increasing: $(0, \infty)$

symmetry (even/odd): even

decreasing: $(-\infty, 0)$

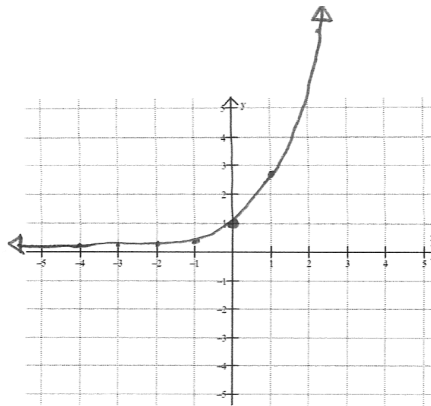
End behavior:

$\lim_{x \rightarrow -\infty} f(x) = \underline{+\infty}$ $\lim_{x \rightarrow \infty} f(x) = \underline{+\infty}$

Function: $f(x) = e^x$

Graph of the Parent function:

x	f(x)
-4	.02
-3	.05
-2	.14
-1	.37
0	1
1	2.7
2	7.4
3	20.1
4	54.6



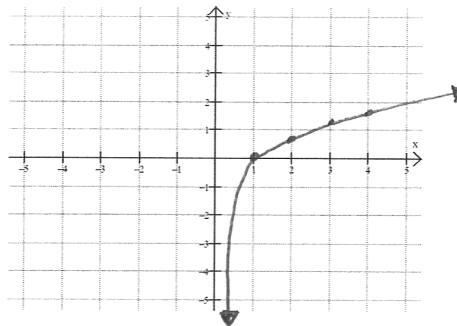
Domain: $(-\infty, \infty)$ extrema: none
 Range: $(0, \infty)$ asymptotes: $y=0$
 continuity: continuous x-intercepts: none
 boundedness: not bounded y-intercepts: 1
 increasing: $(-\infty, \infty)$ symmetry (even/odd): neither
 decreasing: never End behavior:

$\lim_{x \rightarrow -\infty} f(x) = 0$ $\lim_{x \rightarrow \infty} f(x) = +\infty$

Function: $f(x) = \ln x$

Graph of the Parent function:

x	f(x)
-4	—
-3	—
-2	—
-1	—
0	—
1	0
2	.69
3	1.1
4	1.4



Domain: $(0, \infty)$ extrema: none
 Range: $(-\infty, \infty)$ asymptotes: $x=0$
 continuity: continuous x-intercepts: 1
 boundedness: not bounded y-intercepts: none
 increasing: $(0, \infty)$ symmetry (even/odd): neither
 decreasing: never End behavior:

$\lim_{x \rightarrow -\infty} f(x) = \text{DNE}$ $\lim_{x \rightarrow \infty} f(x) = \infty$