2C.2 – Notes - Radical Characteristics Name: Key

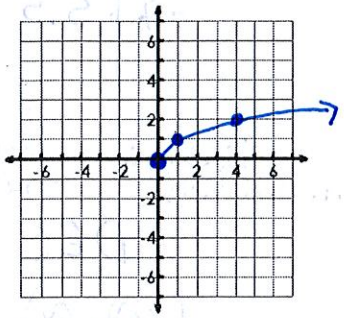
CCGPS Adv. Algebra Date: _____

Sketch the graph and fill in the chart for each of the following. Describe the transformation beside the graph.

1. $f(x) = \sqrt{x}$ Shoot

Starting Pt: (0, 0)	Inc or Dec: INC
Domain: $[0, \infty)$	Range: $[0, \infty)$
Abs. Max or Abs Min:	(0, 0)

End Behavior: $x \to 0$, $f(x) \to 0$ $x \to \infty$, $f(x) \to \infty$

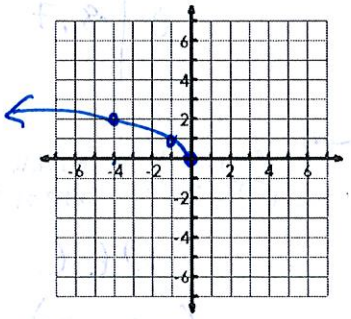


x	y
0	0
1	1
4	2

2. $f(x) = \sqrt{-x}$ *reflect over y-axis bouquet

Starting Pt: (0, 0)	Inc or Dec: DEC
Domain: $(-\infty, 0]$	Range: $[0, \infty)$
Abs. Max or Abs Min:	(0, 0)

End Behavior: $x \to -\infty$, $f(x) \to \infty$ $x \to 0$, $f(x) \to 0$

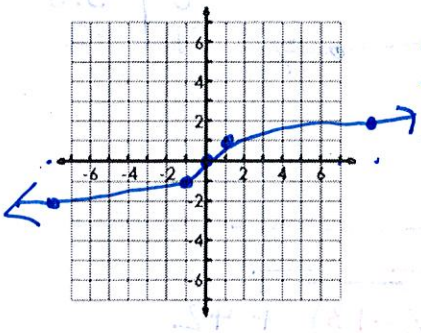


x	y
0	0
-1	1
-4	2

3. $f(x) = \sqrt[3]{x}$ free style

Starting Pt: (0, 0)	Inc or Dec: INC
Domain: $(-\infty, \infty)$	Range: $(-\infty, \infty)$
Abs. Max or Abs Min:	NONE

End Behavior: $x \to -\infty$, $f(x) \to -\infty$ $x \to \infty$, $f(x) \to \infty$

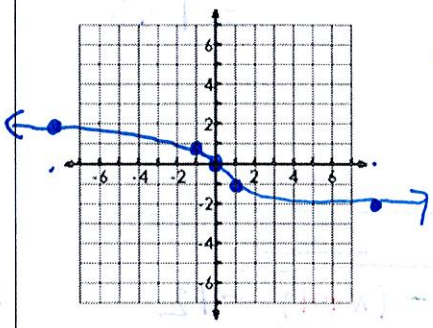


x	y
-8	-2
-1	-1
0	0
1	1
8	2

4. $f(x) = -\sqrt[3]{x}$ *reflect over x-axis back stroke

Starting Pt: (0, 0)	Inc or Dec: DEC
Domain: $(-\infty, \infty)$	Range: $(-\infty, \infty)$
Abs. Max or Abs Min:	NONE

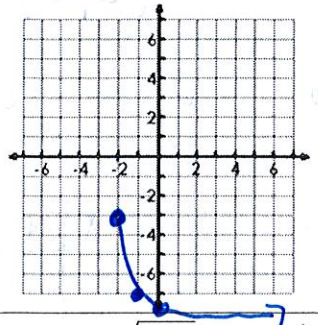
End Behavior: $x \to -\infty$, $f(x) \to \infty$ $x \to \infty$, $f(x) \to -\infty$



x	y
-8	2
-1	1
0	0
1	-1
8	-2

5. $f(x) = -4\sqrt{x+2} - 3$ • left 2 • down 3 • Reflect over x-axis, V. stretch 4 — bowl

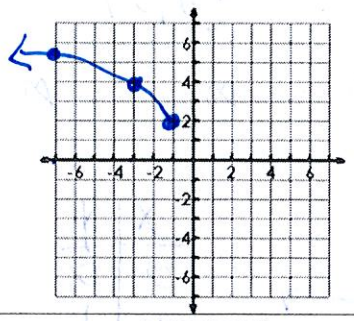
Starting Pt: $(-2, -3)$	Inc or Dec: DEC
Domain: $[-2, \infty)$	Range: $(-\infty, -3]$
Abs. Max or Abs Min: $(-2, -3)$	
End Behavior: $x \to -2$, $f(x) \to -3$ $x \to \infty$, $f(x) \to -\infty$	



X	Y
-2	-3
-1	-7
0	-8.7

6. $f(x) = \sqrt{-2(x+1)} + 2$ • H. shrink ½ • up 2 • Reflect over y-axis • left 1 — bouquet

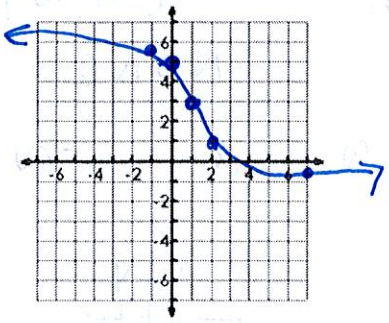
Starting Pt: $(-1, 2)$	Inc or Dec: DEC
Domain: $(-\infty, -1]$	Range: $[2, \infty)$
Abs. Max or Abs Min: $(-1, 2)$	
End Behavior: $x \to -\infty$, $f(x) \to \infty$ $x \to -1$, $f(x) \to 2$	



X	Y
-1	2
-3	4
-7	5.5

7. $f(x) = -2\sqrt[3]{x-1} + 3$ • Right 1 • up 3 • Reflect over x-axis • V stretch 2 — back stroke

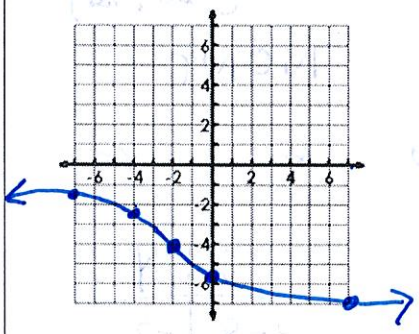
Starting Pt: $(1, 3)$	Inc or Dec: DEC
Domain: $(-\infty, \infty)$	Range: $(-\infty, \infty)$
Abs. Max or Abs Min: NONE	
End Behavior: $x \to -\infty$, $f(x) \to \infty$ $x \to \infty$, $f(x) \to -\infty$	



X	Y
-1	5.5
0	5
1	3
2	1
7	-.6

8. $f(x) = \sqrt[3]{-3(x+2)} - 4$ • left 2 • down 4 • Reflect over y-axis, • H. shrink 1/3 — back stroke

Starting Pt: $(-2, -4)$	Inc or Dec: DEC
Domain: $(-\infty, \infty)$	Range: $(-\infty, \infty)$
Abs. Max or Abs Min: NONE	
End Behavior: $x \to -\infty$, $f(x) \to \infty$ $x \to \infty$, $f(x) \to -\infty$	



X	Y
-7	-1.5
-4	-2.2
-2	-4
0	-5.8
7	-7

Write the equation of the radical with the given transformations.

9. Compressed vertically by ¼, reflected over the y-axis, left 4, and down 72.

$f(x) = \frac{1}{4}\sqrt{-(x+4)} - 72$

10. Stretched horizontally by 7, reflected over the x-axis, right 13, and up 42.

$f(x) = -\sqrt{\frac{1}{7}(x-13)} + 42$