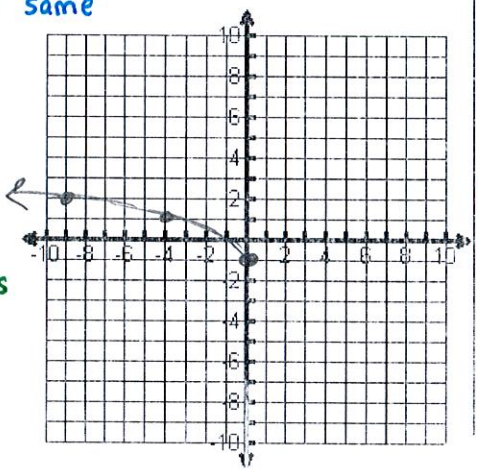
Name _____ Date _____

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

x	y
0	-1
-4	1
-9	2

SP; calc

- reflect on y-axis
- down 1

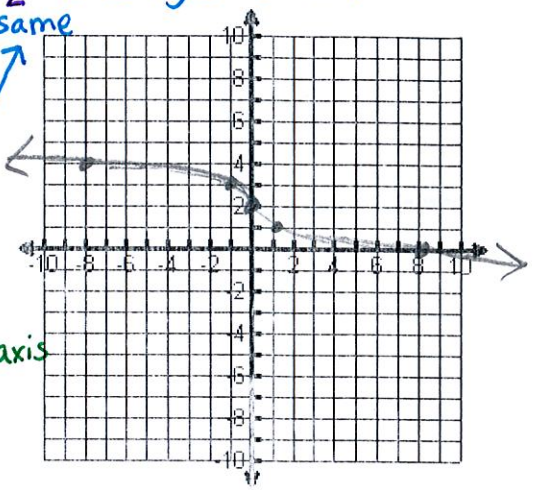


2. $f(x) = -\sqrt[3]{x} + 2$ "Free Style" Swim

x	y
-8	4
-1	3
0	2
1	1
8	0

calc; SP; calc

- reflect on x-axis
- up 2

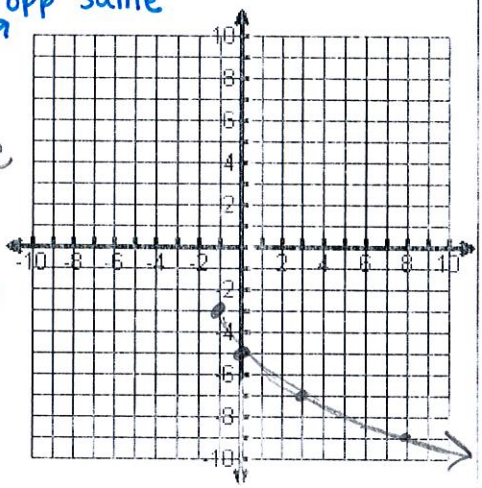


3. $f(x) = -2\sqrt{x+1} - 3$ "Shoot" Basketball

x	y
-1	-3
0	-5
3	-7
8	-9

SP; calc

- reflect on x-axis
- down 3
- left 1

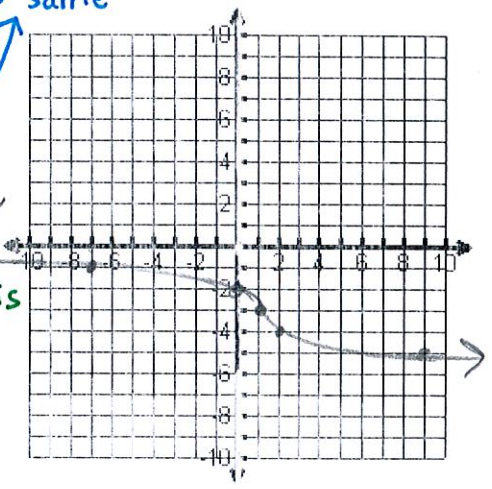


4. $f(x) = -\sqrt[3]{x-1} - 3$ "Free Style" Swim

x	y
-7	-1
0	-2
1	-3
2	-4
9	-5

calc; SP; calc

- reflect on x-axis
- down 3
- right 1



"Shoot" Basketball

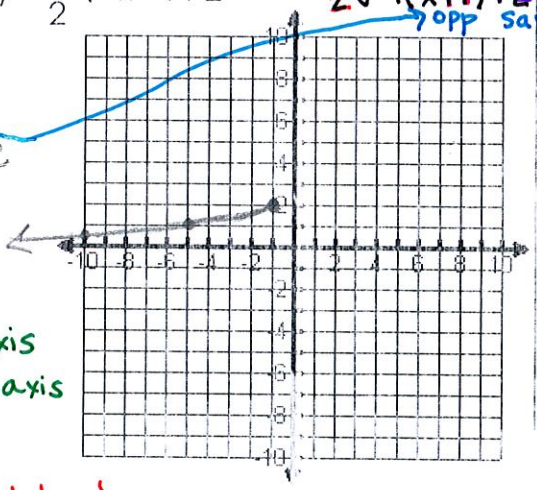
5. $f(x) = \frac{-1}{2}\sqrt{-x-1} + 2 = -\frac{1}{2}\sqrt{-1(x+1)} + 2$ ← Factor out negative

opp; same

x	y
-1	2
-5	1
-10	.5

SP; calc

- reflect on x-axis
- reflect on y-axis
- left 1
- up 2
- vertical shrink by $\frac{1}{2}$



"Free Style" Swim

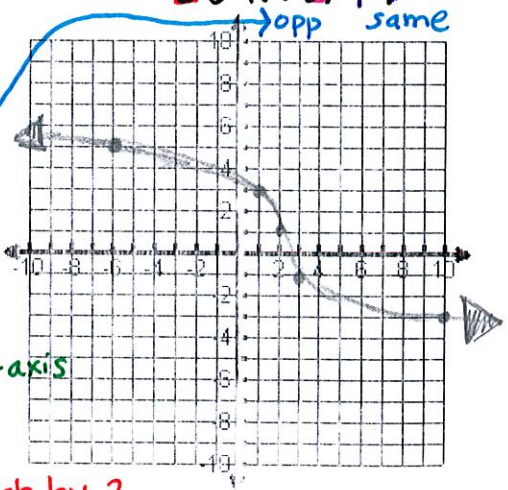
6. $f(x) = 2\sqrt[3]{-x+2} + 1 = 2\sqrt[3]{-1(x-2)} + 1$ ← Factor out negative

opp; same

x	y
-6	5
1	3
2	1
3	-1
10	-3

SP

- reflect on y-axis
- Right 2
- up 1
- vertical stretch by 2



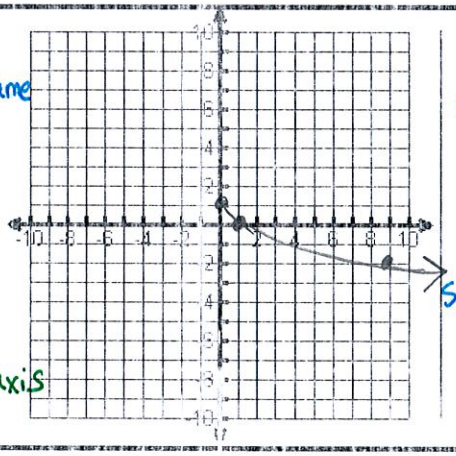
7. $f(x) = -\sqrt{x} + 1$ (opp, same)

"Shoot" Basket ball

x	y
0	1
1	0
9	-2

SP

- Reflect on x-axis
- up 1



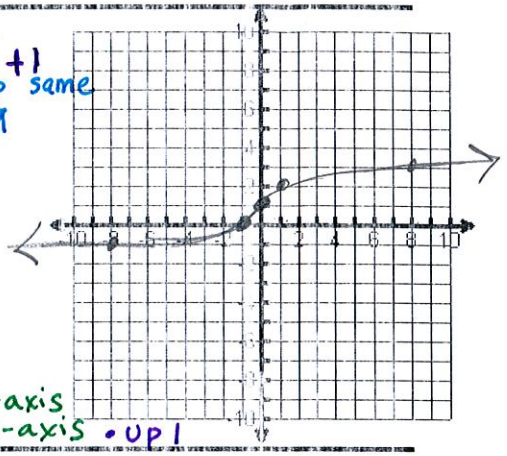
8. $f(x) = -\sqrt[3]{-x} + 1$ (opp, same)

"Free Style" Swim

x	y
-8	-1
-1	0
0	1
1	2
8	3

SP

- Reflect on x-axis
- Reflect on y-axis
- up 1



Using $f(x) = \sqrt{x}$ as a guide, describe the transformation.

9. $f(x) = \sqrt{3(x+5)}$
- horizontal shrink by $\frac{1}{3}$
- left 5

10. $f(x) = \frac{1}{4}\sqrt{-x}$
- vertical shrink by 1/4
- Reflect y-axis

11. $f(x) = \sqrt{x+4} - 1$
- left 4
- down 1

12. $f(x) = -4\sqrt{x} + 1$
- Reflect on x-axis
- vertical stretch by 4
- up 1

13. $f(x) = 3\sqrt{-x} + 2$
- vertical stretch by 3
- Reflect y-axis
- up 2

14. $f(x) = \sqrt{\frac{1}{3}(x+2)}$
- horizontal stretch by 3
- left 2

Use the description to write the square-root function g.

15. The parent function $f(x) = \sqrt{x}$ is compressed (outside) vertically by a factor of 1/3 and then translated (inside) 3 units left. $g(x) = \frac{1}{3}\sqrt{x+3}$

16. The parent function $f(x) = \sqrt{x}$ is reflected (inside) across the y-axis, stretched (inside) horizontally by a factor of 6, and then translated (inside) 2 units right $g(x) = \sqrt{-\frac{1}{6}(x-2)}$

17. The parent function $f(x) = \sqrt{x}$ is reflected (outside) across the x-axis and then translated (inside) 1 unit left and (outside) 4 units down $g(x) = -\sqrt{x+1} - 4$

18. The parent function $f(x) = \sqrt{x}$ is reflected (inside) across the y-axis, (outside) vertically stretched by a factor of 7, and then (outside) translated up 5 units $g(x) = 7\sqrt{-x} + 5$