Accelerated Geom/Alg. 2
Radical Equations Review

Name
Date 0 Block

Solve the following equations. Be sure to check for extraneous solutions.

1. $x=\sqrt{8x}$

$x^2=8x$

$x^2-8x=0$

$x(x-8)=0$

$x=0,8$

2. $\sqrt[3]{x-3}=2$

$x-3=8$

$x=11$

3. $\sqrt[10]{2x-3}=\sqrt[10]{6-x}$

$2x-3=6-x$

$3x=9$

$x=3$

4. $\sqrt[5]{4x}=\sqrt[5]{2x-7}$

$4x=2x-7$

$2x=-7$

$x=-3.5$

5. $\sqrt{14x-40}=x$

$14x-40=x^2$

$0=x^2-14x+40$

$0=(x-10)(x-4)$

$x=10,4$

6. $x=\sqrt{2-x}$

$x^2=2-x$

$x^2+x-2=0$

$(x+2)(x-1)=0$

$x=-2,1$

-2 is extraneous

$x=1$

7. $-4\sqrt{-9-x}=-4$

$\sqrt{-9-x}=1$

$-9-x=1$

$-x=10$

$x=-10$

8. $2\sqrt[3]{x+8}=\sqrt[3]{8-6x}$

$8(x+8)=8-6x$

$8x+64=8-6x$

$14x=-56$

$x=-4$

9. $\sqrt{6x-5}=x$

$6x-5=x^2$

$0=x^2-6x+5$

$0=(x-5)(x-1)$

$x=5,1$

10. $-12=-3\sqrt[3]{x+6}$

$4=\sqrt[3]{x+6}$

$64=x+6$

$58=x$

Match the function (labeled a – f) with the correct transformation. Place the letter of the correct function on the line beside each number.

g 11. Vertical shift down 2

c 12. Reflection over the x-axis

a 13. Vertical shift up 2

b 14. Horizontal shift left 2

e 15. Horizontal shift right 2

d 16. Vertical stretch by 2

f 17. Vertical shrink by 1/2

~~a)~~ $f(x)=\sqrt[3]{x}+2$

~~b)~~ $g(x)=\sqrt[3]{x+2}$

~~c)~~ $h(x)=-\sqrt[3]{x}$

~~d)~~ $i(x)=2\sqrt[3]{x}$

~~e)~~ $j(x)=\sqrt[3]{x-2}$

~~f)~~ $k(x)=\frac{1}{2}\sqrt[3]{x}$

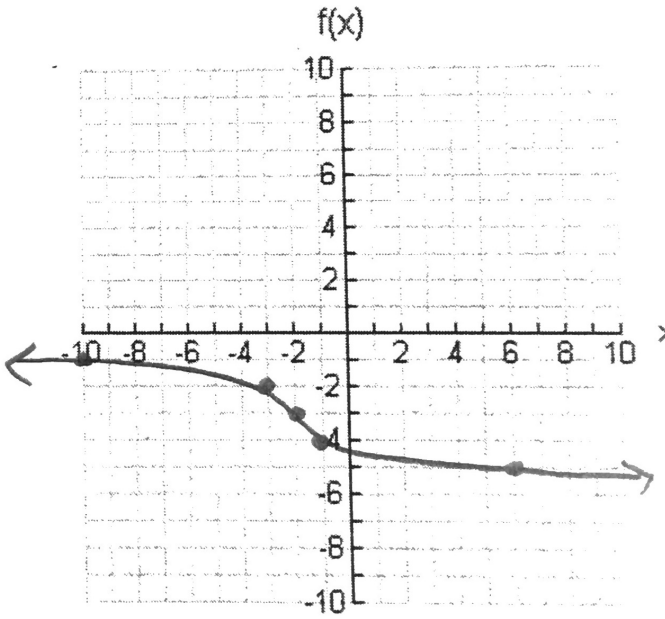
~~g)~~ $l(x)=\sqrt[3]{x}-2$

Graph the following equations.

18. $y=-\sqrt[3]{x+2}-3$

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

$x-2$	$-y-3$
-10	-1
-3	-2
-2	-3
-1	-4
6	-5



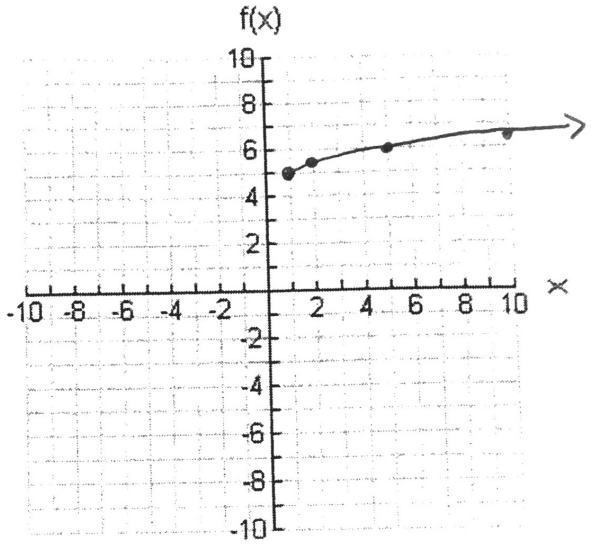
Transformations: reflection over x-axis, left 2, down

D: $(-\infty, \infty)$ R: $(-\infty, \infty)$

19. $y=\frac{1}{2}\sqrt{x-1}+5$

x	y
0	0
1	1
4	2
9	3

$x+1$	$\frac{1}{2}y+5$
1	5
2	5.5
5	6
10	6.5



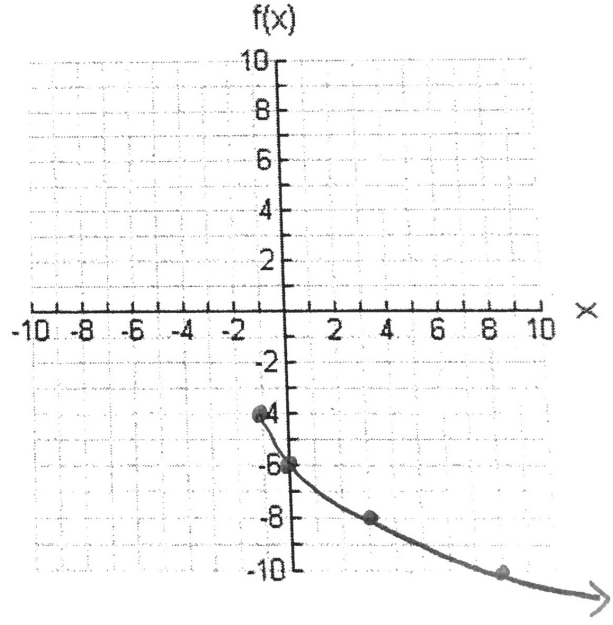
Transformations: Vertical shrink of 1/2, right 1, up 5

D: [1, ∞) R: [5, ∞)

20. $f(x)=-2\sqrt{x+1}-4$

x	y
0	0
1	1
4	2
9	3

$x+1$	$-2y-4$
-1	-4
0	-6
3	-8
8	-10



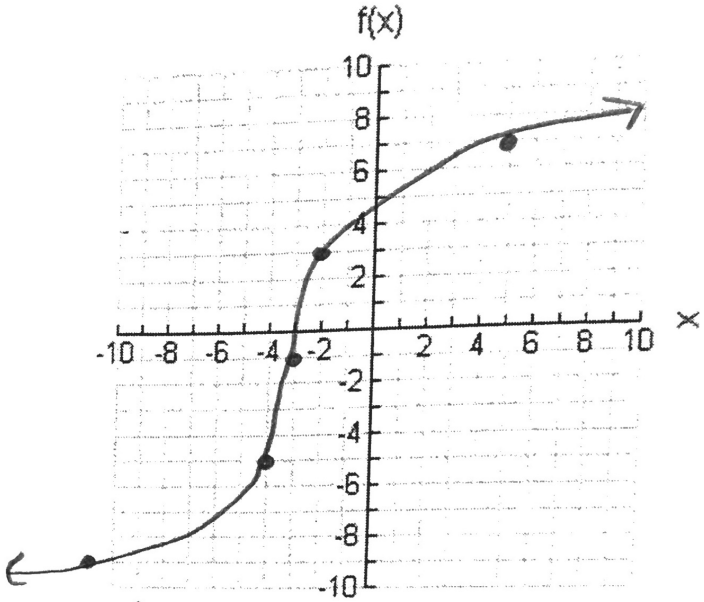
Transformations: reflection over x-axis, left 1, down 4, vertical stretch of 2

D: [-1, ∞) R: (-∞, -4]

21. $f(x) = 4\sqrt[3]{x+3} - 1$

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

$x-3$	$4y-1$
-11	-9
-4	-5
-3	-1
-2	3
5	7



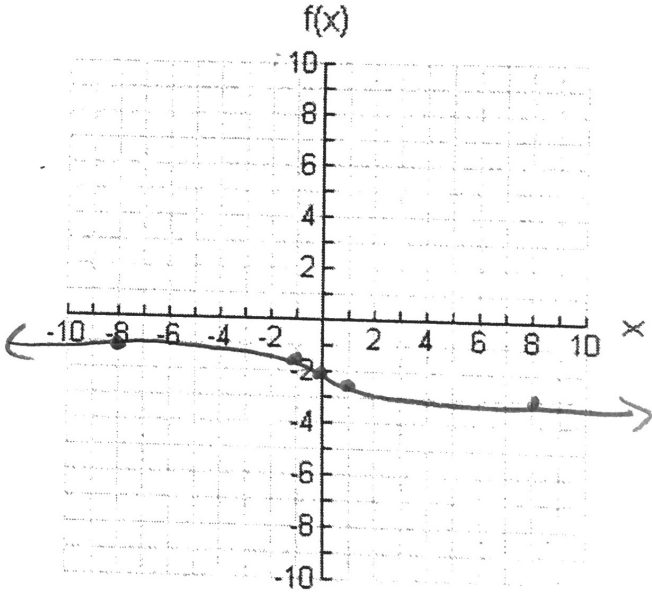
Transformations: Vertical stretch of 4, left 3, down 1

D: $(-\infty, \infty)$ R: $(-\infty, \infty)$

22. $f(x) = -\frac{1}{2}\sqrt[3]{x} - 2$

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

x	$-\frac{1}{2}y-2$
-8	-1
-1	-1.5
0	-2
1	-2.5
8	-3



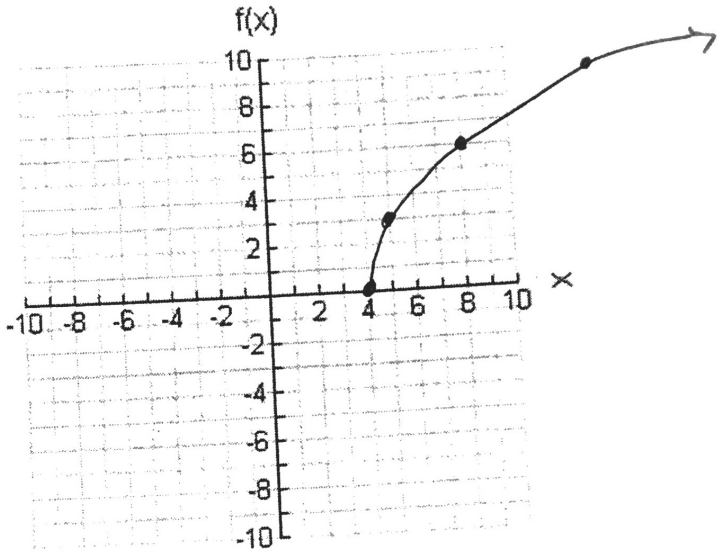
Transformations: reflection over x-axis, vertical shrink of $\frac{1}{2}$, down 2

D: $(-\infty, \infty)$ R: $(-\infty, \infty)$

23. $f(x) = 3\sqrt{x-4}$

x	y
0	0
1	1
4	2
9	3

$x+4$	$3y$
4	0
5	3
8	6
13	9



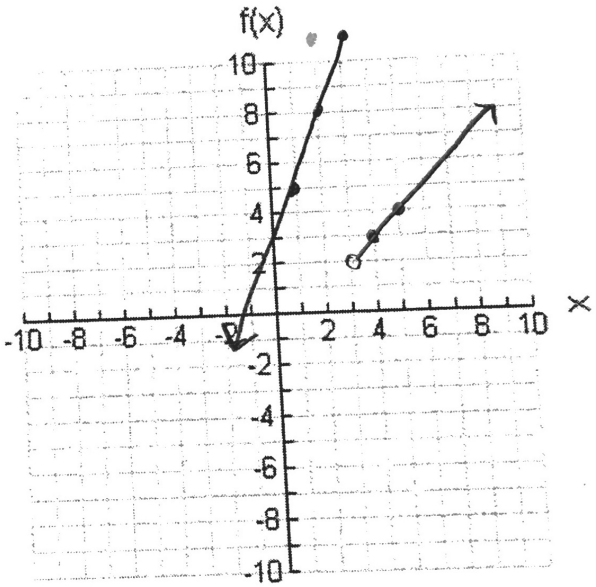
Transformations: vertical stretch of 3, right 4

D: $[4, \infty)$ R: $[0, \infty)$

24. $f(x) = \begin{cases} 3x+2, & x \le 3 \\ x-1, & x > 3 \end{cases}$

X	y
3	11
2	8
1	5

X	y
3	2
4	3
5	4



Continuous or Discontinuous

Evaluate:

$f(-2)$

$3(-2)+2$

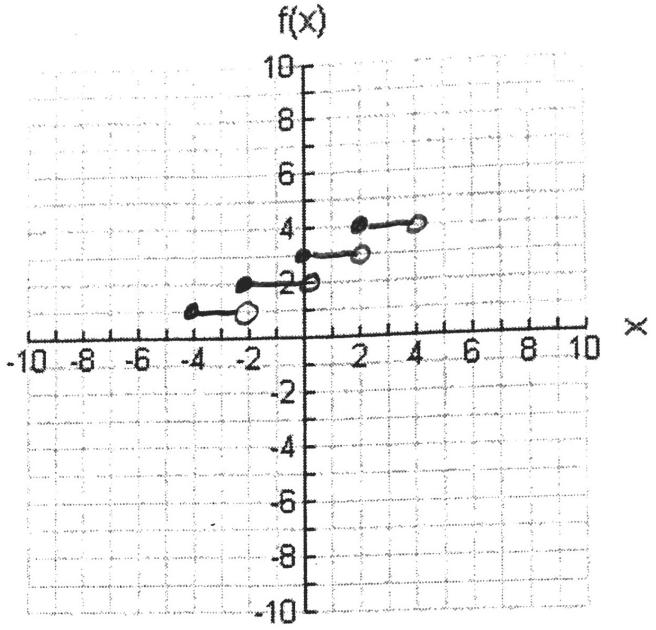
-4

$f(10)$

$10-1$

9

25. $g(x)=\begin{cases}1, & -4\le x<-2\\ 2, & -2\le x<0\\ 3, & 0\le x<2\\ 4, & 2\le x<4\end{cases}$



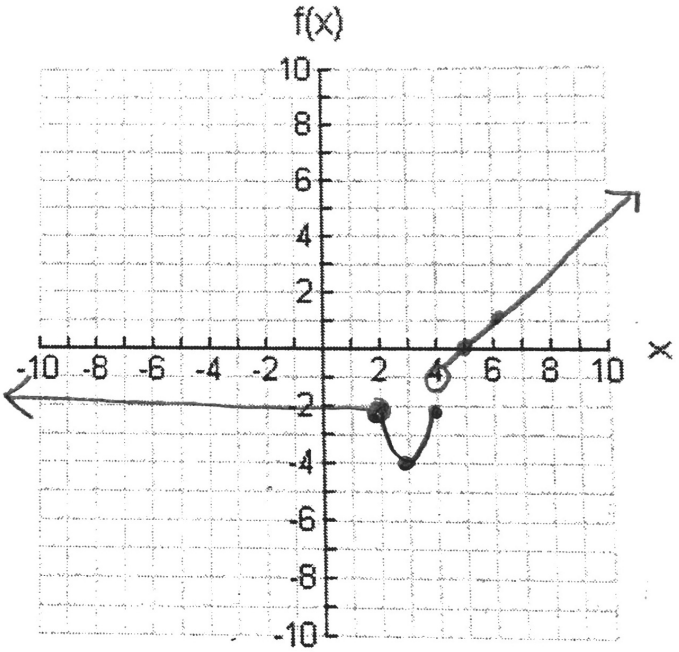
Continuous or Discontinuous

26. $h(x)=\begin{cases}x-5 & x>4\\ 2(x-3)^2-4 & 2\le x\le 4\\ -2 & x<2\end{cases}$

x	y
4	-1
5	0
6	1

x	y
2	-2
3	-4
4	-2

x	y
2	-2
1	-2
0	-2



Continuous or Discontinuous

Evaluate:

$h(-4)$

-2

$h(3)$

$2(3-3)^2-4$

-4

$h(10)$

$10-5$

5