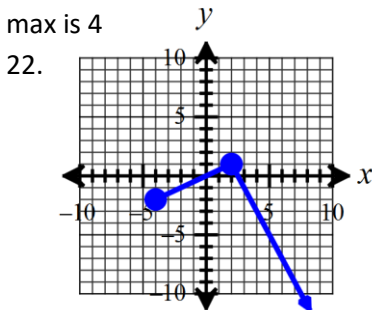
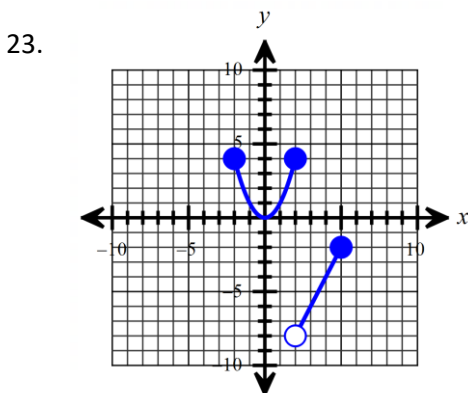


**SM3H unit 2 test review answers**

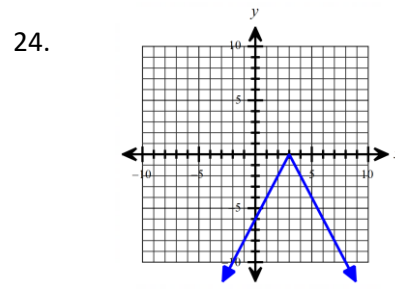
1.  $-\frac{4}{9}$
2. -29
3.  $\frac{-2x}{x^2-7}$
4.  $3x^2 + 11x + 1$
5.  $(-\infty, -7) \cup (-7, 7) \cup (7, \infty)$
6.  $(-\infty, 5]$
7.  $(-\infty, \infty)$
8.  $\frac{x-1}{x+5}; (-\infty, -5) \cup (-5, \infty)$
9.  $\frac{\sqrt{2x}}{2x-7}; [0, \frac{7}{2}) \cup (\frac{7}{2}, \infty)$
10. function, Domain:  $(-\infty, \infty)$   
Range:  $(0, \infty)$ , x-intercept: none  
y-intercept:  $(0, 2)$ , no symmetry
11. function, Domain:  $(-\infty, \infty)$   
Range:  $[-4, \infty)$ , x-intercept:  $(-2, 0), (0, 0), (2, 0)$   
y-intercept:  $(0, 0)$ , symmetry: even
12. 16
13.  $x = -3, 0, 2$
14.  $(-\infty, -3) \cup (0, 2)$
15.  $(-3, 0) \cup (2, \infty)$
16. even
17. odd
18. odd
19. even
20. increasing:  $(-4, -3) \cup (2, \infty)$   
Decreasing:  $(-3, 0)$ ; Constant:  $(0, 2)$
21. at  $x = 1, -1$  is a local max; the value of the local max is 4



A)  $f(-3) = \frac{-3}{2}$  B)  $f(2) = 1$  C)  $[-4, \infty)$

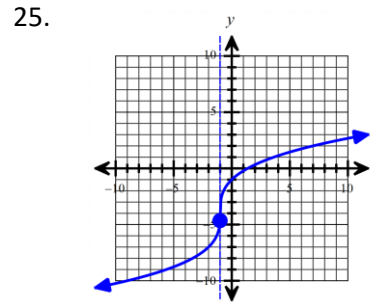


A)  $f(4) = -4$  B)  $f(0) = 0$  C)  $[-2, 5]$



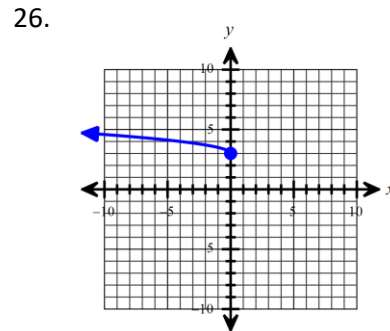
$x + 3$	$-2f(x)$
1	-4
2	-2
3	0
4	-2
5	-4

Reflect over  $x$ -axis, vertical dilation by factor of 2,  
translate right 3



$x - 1$	$3f(x) + 4$
-9	-10
-2	-7
-1	-4
0	-1
7	2

Vertical stretch by factor of 3,  
translate left 1, down 4



$-x$	$\frac{1}{2}f(x) + 3$
0	3
-1	3.5
-4	4
-9	4.5
-16	5

Vertical stretch by factor of  $\frac{1}{2}$ , reflect over  $y$ -axis,  
translate up 3

27.  $f(x) = \sqrt{x} - 2$

28.  $f(x) = \frac{1}{x+3}$

29.  $f(x) = -2(x + 5)^2 + 7$

30a. -12

30b. 0

31a. 3

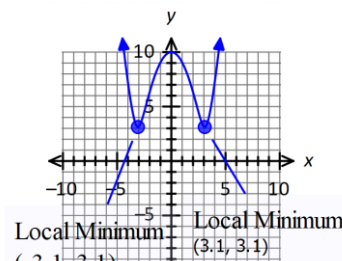
31b.  $\frac{1}{3}$

32a.  $\sqrt{x^4 - 19x^2 + 100} = d(x)$

32b.  $d=10$

32c. 6.32 or  $2\sqrt{10}$

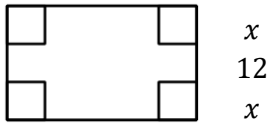
32d.



32e.  $x = \pm 3.1$

33.  $A(x) = \frac{1}{2}x^3$

34a.  $x \quad 20 \quad x$



34b.  $V = (20 - 2x)(12 - 2x)(x)$

34c.  $(0, 4$  inches) There is another restriction in the question, so it is not  $(0, 6)$

34d.  $x = 1$ , 180 cubic inches,  $x = 2$ , 256 cubic inches,  $x = 3$ , 252 cubic inches,  $x = 4$ , 192 cubic inches

34e. Max Volume: 262.7 cubic inches

Length: 15.2 inches

Width: 7.2 inches

Height: 2.4 inches

35a.  $C(x) = 450 + 6x$

35b.  $R(x) = 25x$

35c.  $P(x) = 19x - 450$

35d. 112 dinners must be sold to make \$1678 in profit