Name_____ Date_____

Chapter 8 Test B

③

0	$-(-2)^2-3$	-7
1	$-(-1)^2-3$	-4
2	$-(0)^2-3$	-3
3	$-(1)^2-3$	-4
4	$-(2)^2-3$	-7

Graph the function. Compare the graph to the graph of $f(x) = x^2$.

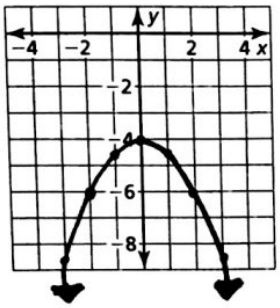
vertex form (2, -3)

Answers

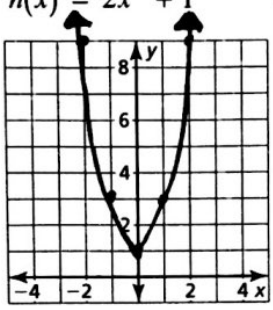
$\frac{-b}{2a}$ ①

-2	$-\frac{1}{2}(-2)^2-4$	-6
-1	$-\frac{1}{2}(-1)^2-4$	-4.5
0	$-\frac{1}{2}(0)^2-4$	-4
1	$-\frac{1}{2}(1)^2-4$	-4.5
2	$-\frac{1}{2}(2)^2-4$	-6
3	$-\frac{1}{2}(3)^2-4$	-8.5

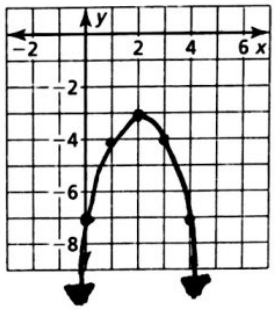
1. $g(x) = -\frac{1}{2}x^2 - 4$



2. $h(x) = 2x^2 + 1$



3. $r(x) = -(x-2)^2 - 3$



1. See left.
2. See left.
3. See left.
4. NEITHER
5. ODD
6. NEITHER
7. See left.
8. See left.
9. _____
10. _____
11. _____
12. _____
13. $f(x) = \frac{1}{2}x^2 - \frac{1}{2}x - 3$
14. $f(x) = x^2 - 5$

$\frac{-b}{2a}$ ②

-2	$2(-2)^2+1$	9
-1	$2(-1)^2+1$	3
0	$2(0)^2+1$	1
1	$2(1)^2+1$	3
2	$2(2)^2+1$	9

Determine whether the function is *even*, *odd*, or *neither*. (CHECK EXPONENTS)

4. $d(x) = 2x - 3$ $\quad 2x^1 - 3x^0$

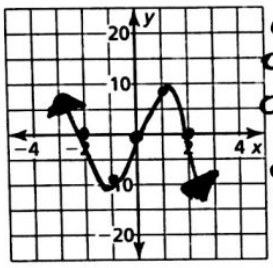
5. $p(x) = -2x^3 - 4x$ $\quad -2x^3 - 4x^1$

6. $f(x) = 2x^2 + 4x$ $\quad 2x^2 + 4x^1$

Use zeros to graph the function.

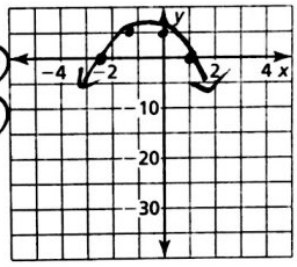
7. $f(x) = -3x^3 + 12x$

⑦ $0 = -3x^3 + 12x$
$0 = -3x(x^2 - 4)$
$0 = -3x(x+2)(x-2)$
$0 = -3x \quad x = 0$
$0 = x + 2 \quad x = -2$
$0 = x - 2 \quad x = 2$



8. $h(x) = -2x^2 - 3x + 5$

$0 = -2x^2 - 3x + 5$
$0 = -1(2x^2 + 3x - 5)$
$0 = -1(2x+5)(x-1)$
$0 = 2x + 5$
$-5 \quad -5$
$\frac{-5}{2} = \frac{2x}{2}$
$0 = x - 1$



Tell whether the table of values represents a *linear*, an *exponential*, or a *quadratic* function. Then write the function.

9.

x	−1	0	1	2	3
y	10	12	14	16	18

10.

x	−2	−1	0	1	2
y	4	2	0	0.5	0.25

11.

x	−1	0	1	2	3
y	−4	−5	−4	−1	4

12.

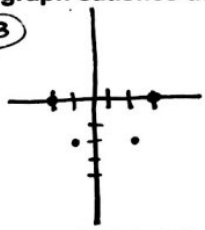
x	−1	0	1	2	3
y	5	3	5	11	21

-2	0
-1	-9
0	0
1	9
2	0

Write a quadratic function in standard form whose graph satisfies the given conditions.

13. passes through (−2, 0), (3, 0), and (2, −2)

⑬



vertex @ 0.5

-2	0
-1	-2
0	-3
0.5	
1	-3
2	-2
3	0

$\frac{1}{2}$ normal size

-2	4
-1	1
0	0
1	1
2	4

BASIC INTERCEPT FORM
$(x+2)(x-3)$
$\frac{1}{2}(x^2 - x - 6) = \frac{1}{2}x^2 - \frac{1}{2}x - 3$

14. is even and has a range of $y \geq -5$

vertex @ 0, -5
$f(x) = (x-0)^2 - 5 = x^2 - 5$

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Chapter 8 **Test B** (continued)

(15) $0=-2x^2-10x+12$
$0=-2(x^2+5x-6)$
$0=-2(x+6)(x-1)$
$x+6=0 \quad x-1=0$
$x=-6 \quad x=1$

(16) $0=\frac{1}{2}(3x-1)(2x+7)$
$0=3x-1 \quad 0=2x+7$
$+1 \quad +1 \quad -7 \quad -7$
$\frac{1}{3}=\frac{3x}{3} \quad \frac{-7}{2}=\frac{2x}{2}$

Find the zeros of the function.

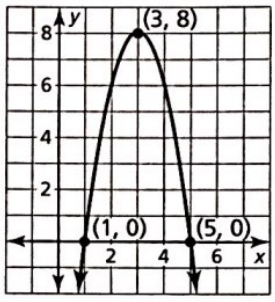
15. $f(x) = -2x^2 - 10x + 12$

16. $k(x) = \frac{1}{2}(3x - 1)(2x + 7)$

17. $g(x) = x^4 - 5x^2 + 4$
$0=(x^2-4)(x^2-1)$
$0=(x+2)(x-2)(x+1)(x-1)$

18. $j(x) = 2x^3 - 18x$
$0 = 2x(x^2-9)=2x(x+3)(x-3)$

19. Consider the graph of the function f.



a. Find the domain, range, and zeros of the function.

b. Write the function f in standard form.
reflect & twice as long.

c. Compare the graph of f to the graph of $g(x) = x^2$.

d. Compare the graph of f to the graph of $h(x) = -f(x + 3) - 1$.

Find the vertex and axis of symmetry of the graph of the function.

VERTEX FORM

20. $y = -3(x + 4)^2 - 2$

VERTEX FORM

21. $f(x) = \frac{1}{4}(x - 1)^2 + 0$

STANDARD FORM

22. $g(x) = \frac{1}{2}x^2 - 6x + 10$
$-\frac{b}{2a}=\frac{-(-6)}{2(\frac{1}{2})}=\frac{6}{1}=6$; $\frac{1}{2}(6)^2-6(6)+10=-8$

STANDARD FORM

23. $j(x) = \frac{2}{3}x^2 + 18x$
$-\frac{b}{2a}=\frac{-18}{2(\frac{2}{3})}=\frac{-18}{\frac{4}{3}}=\frac{-18}{1}\cdot\frac{3}{4}=-\frac{54}{4}=-13.5$

24. ~~The table shows the number of customers c that came into a store over a number of hours t.~~

Hours, t	1	2	3	4
Customers, c	3	9	19	33

a. ~~Tell whether the data can be modeled by a *linear*, an *exponential*, or a *quadratic* function. Explain.~~

b. ~~Write a function that models the data.~~

~~**Plot the points. Tell whether the points appear to represent a *linear*, an *exponential*, or a *quadratic* function.**~~

~~**25.** $(-3, -14), (1, 2), (4, 14), (-2, -10), (0, -2)$~~

~~**26.** $\left(-4, \frac{1}{3}\right), (4, 3), (0, 1), (8, 9)$~~

23. (cont)
$x=-13.5$
$\frac{2}{3}(-13.5)^2+18(-13.5)$
$121.5-243$
-121.5

(19b)
Starting in vertex form then mult. by -2
$y=(x-3)^2+8$
$y=-2(x-3)^2+8$
$-2(x-3)(x-3)+8$
$-2(x^2-6x+9)+8$
$-2x^2+12x-18+8$

or intercept form
$y=(x-1)(x-5)$
$y=x^2-6x+5$
$y=-2(x^2-6x+5)=-2x^2+12x-10$

Answers

15. (-6,0)(1,0)
16. $(\frac{1}{3},0)(-\frac{7}{2},0)$
17. (±2,0)(±1,0)
18. (0,0)(±3,0)
19. a. d: ARN
r: $y \le 8$
z: (1,0)(5,0)
b. $y=-2x^2+12x-10$
c. RT 3, UP 8, REFLECT & STRETCH VERT
d. LEFT 3, DOWN 1 REFLECT
20. (-4,-2); x=-4
21. (1,0); x=1
22. (6,-8); x=6
23. (-13.5,-121.5); x=-13.5
24. a. OMIT
b.
25.
26.

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