Concepts of Calculus With Applications Updated Edition 1st Edition Goshaw Test Bank
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UNIT 0 TOPIC 1 QUIZ

Name_____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

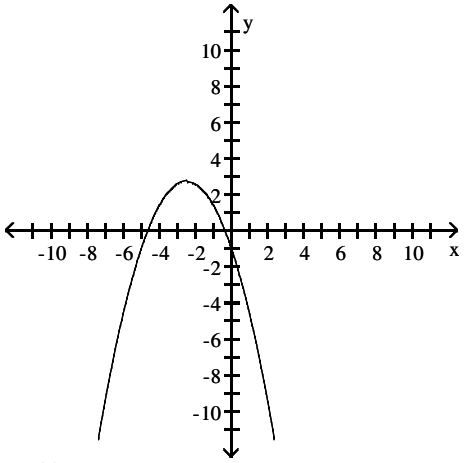
State whether the following represents a function.

1) Set A: students attending Laughlin Community College
Set B: social security number of the student 1) _____
A) Yes B) No

2) $y = x^3 - 2x + 4$ 2) _____
A) Yes B) No

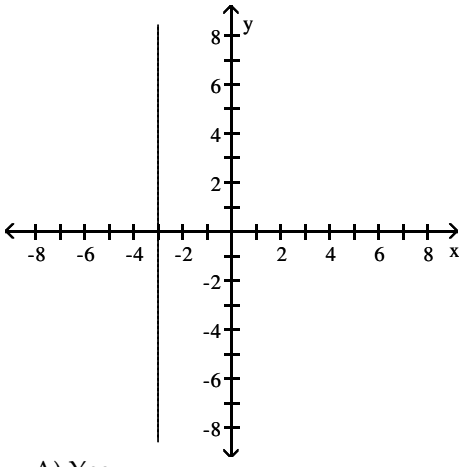
State whether the graph represents a function.

3) 3) _____



A) Yes B) No

4) 4) _____



A) Yes B) No

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Evaluate the function at the indicated value.

5) $f(x) = -7x^2 + 6x + 9$; $f(3)$ 5) _____

A) −36 B) −40 C) 6 D) −46

6) $f(x) = x^2 - 4x + 6$; $f(a + h)$ 6) _____

A) $a^2 + 2ah + h^2 - 4a - 4h + 6$ B) $a^2 + h^2 - 4a + h + 6$

C) $a^2 + h^2 - 4a - 4h + 6$ D) $a^2 + 2ah + h^2 - 4a + 6$

Simplify the difference quotient for the given function.

7) $f(x) = -3x + 6 + x^2$ 7) _____

A) $-3 + a^2 + 2a + h$ B) $-3 + 2a + h$

C) $-3a + 2ah + h$ D) $-3a + h + 6$

8) $f(x) = 8x^3$ 8) _____

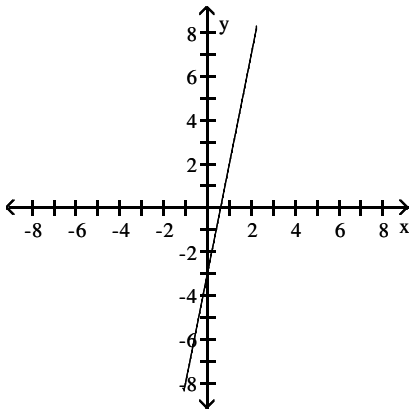
A) $24a^2 + 24ah + 8h$ B) $24a^2 + 24ah + 8h^2$

C) $24a^2$ D) $24a^2 + h$

Choose the graph that matches the equation.

9) $y = 5x - 3$ 9) _____

A)



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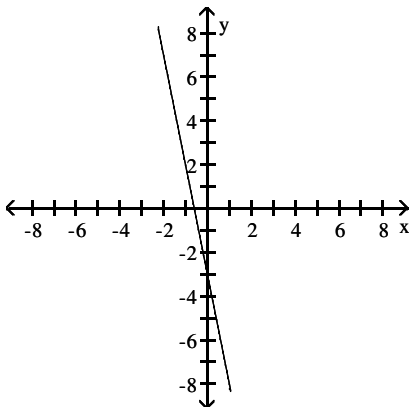

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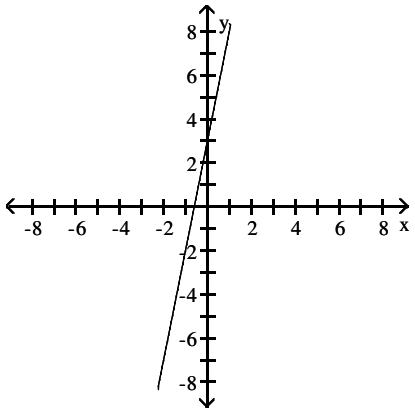

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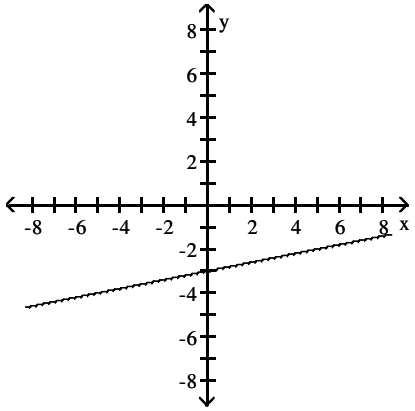
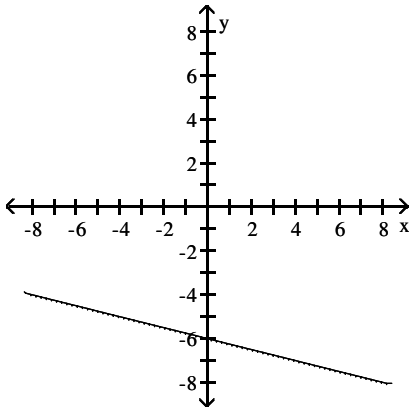


10) $y = -4x - 6$ 10) _____

A)



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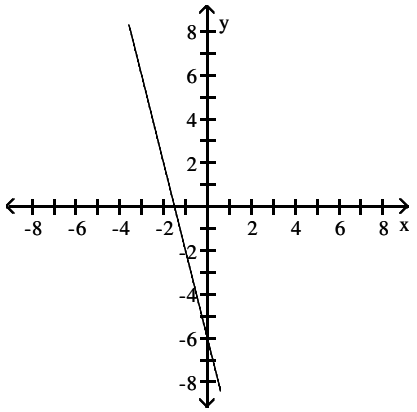
B)



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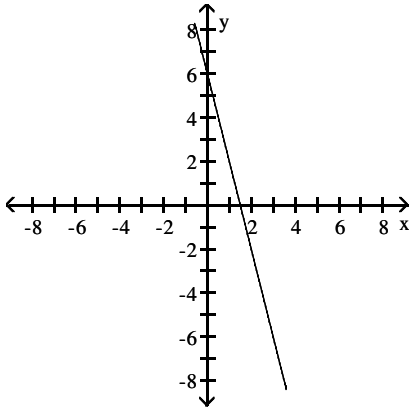

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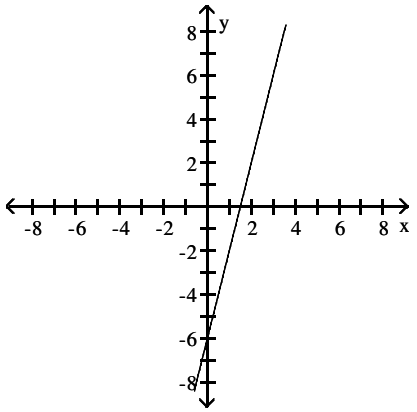

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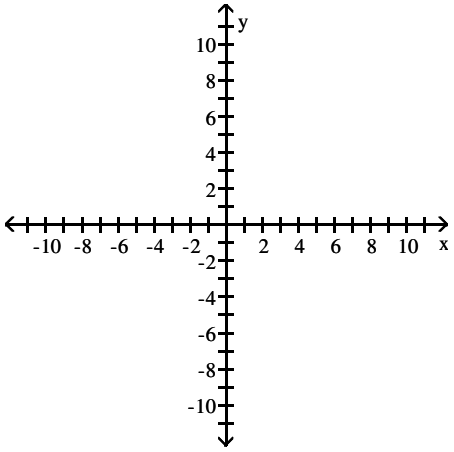
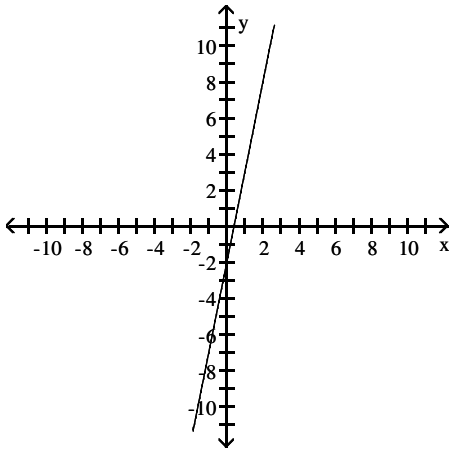
Determine the slope and y–intercept of the linear function. Draw the graph.

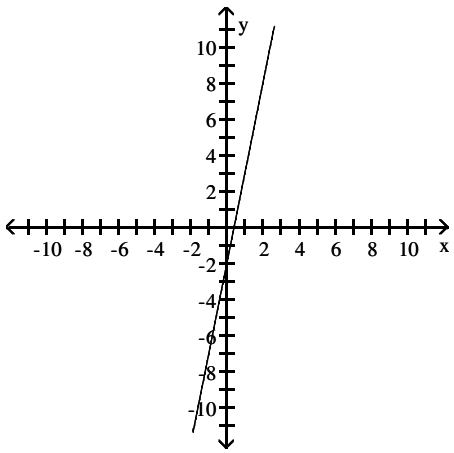
11) y = 5 – 2x 11) _____



A) slope 5; (0, –2)



B) slope 2; (0, –5)



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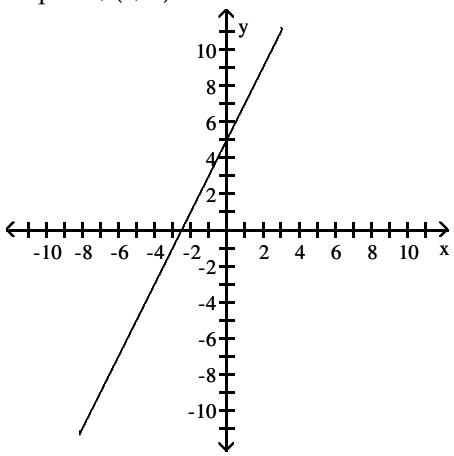
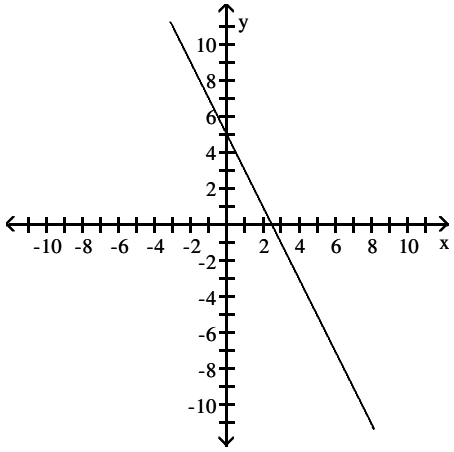
C) slope −2; (0, 5)

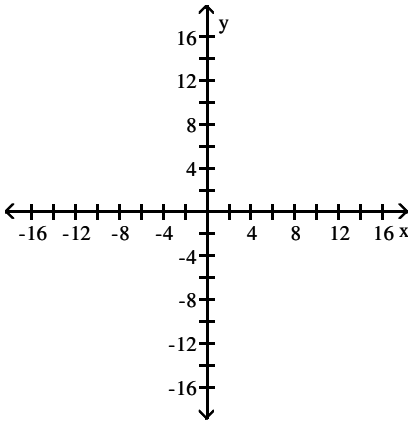


D) slope −2; (0, 5)



Graph the function.

12) $f(x) = |x| - 5$ 12) _____



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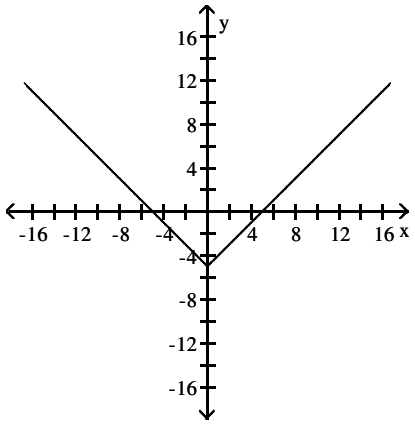
A)



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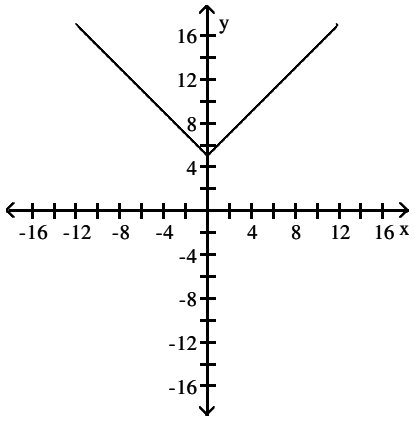

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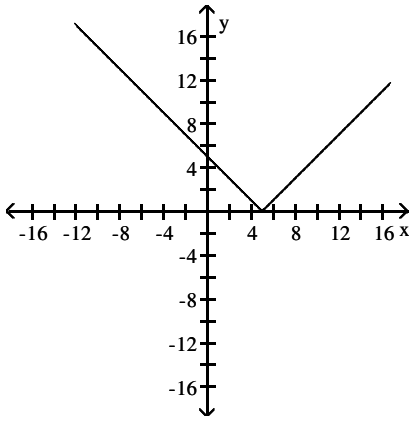

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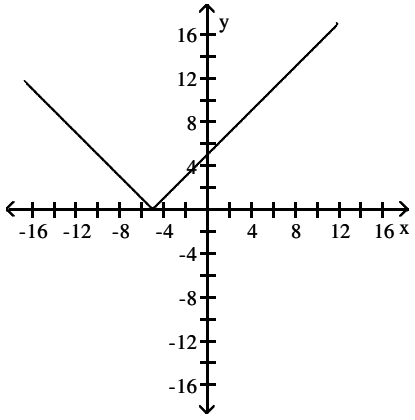

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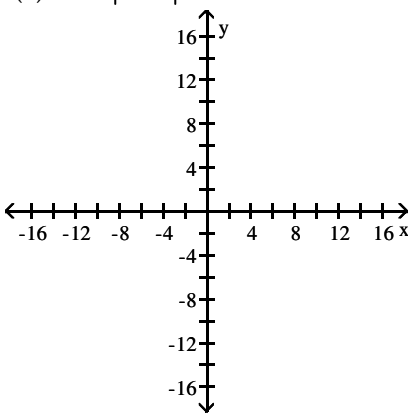
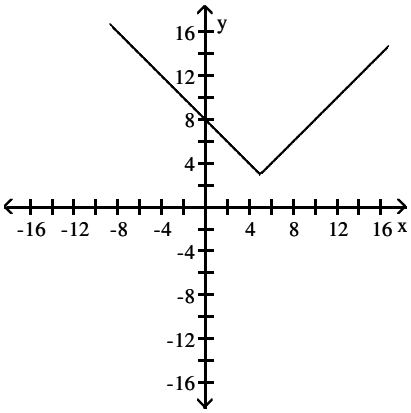
13) $f(x) = 3 - |x - 5|$ 13) _____



A)



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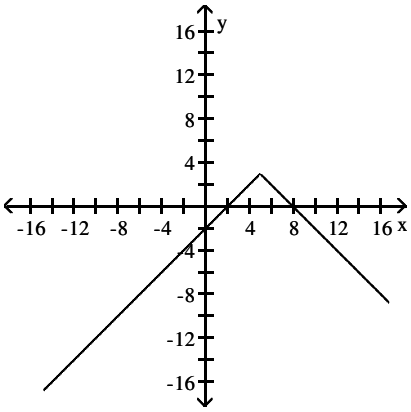

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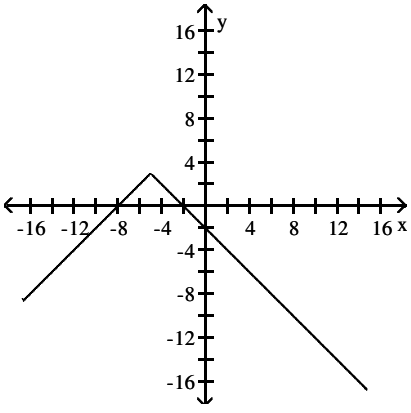

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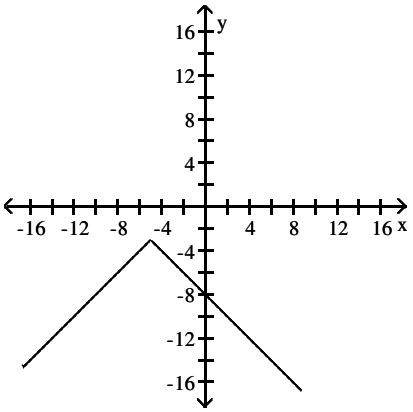
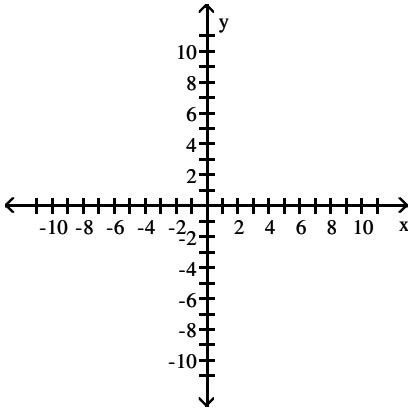
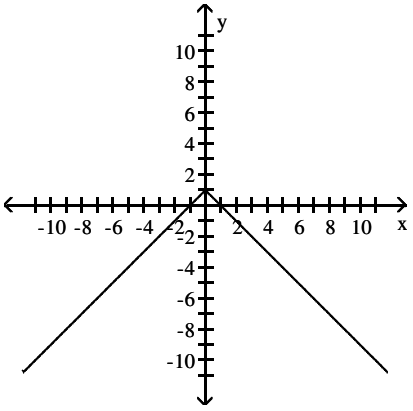
D)



14) $f(x) = 1 - |x|$ 14) _____



A)



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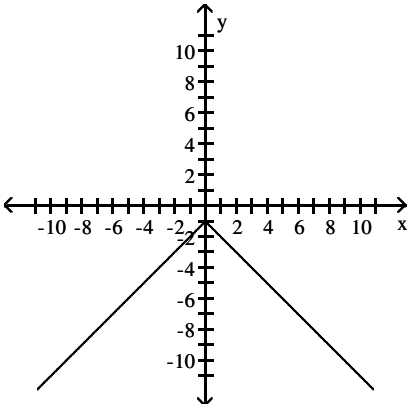

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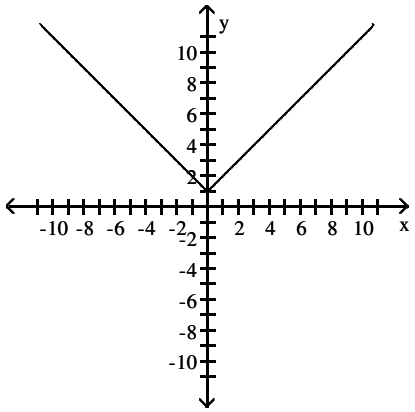
C)



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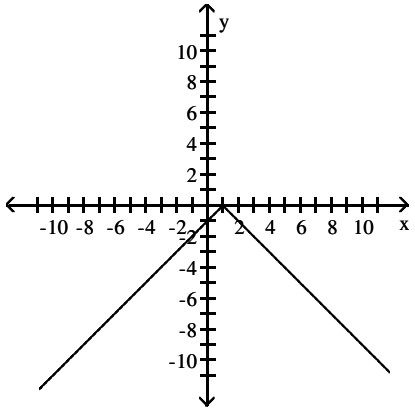

Find the domain and range of the function.

15) $f(x) = |x + 4| + 2$ 15) _____

A) domain: reals; range: $y \geq 2$ B) domain: reals; range: $y \leq 2$

C) domain: reals; range: reals D) domain: $x \geq 4$; range: $y \geq 2$

16) $f(x) = 2 - |x|$ 16) _____

A) domain: $x \leq 2$; range: reals B) domain: reals; range: reals

C) domain: reals; range: $y \leq 2$ D) domain: reals; range: $y \geq 2$

Solve the problem.

17) A moving firm charges a flat fee of $35 plus $30 per hour. Write a function describing the total cost in dollars of using the moving firm for x hours. 17) _____

A) $C(x) = 30x - 35$ B) $C(x) = 30x + 35$

C) $C(x) = 35x + 30$ D) $C(x) = 35x - 30$

18) The cost C, in dollars, to produce graphing calculators is given by the function $C(x) = 52x + 3000$, where x is the number of calculators produced. What is the cost to produce 2800 calculators? 18) _____

A) $145,600 B) $142,600 C) $148,600 D) $148,950

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19) A construction company uses the function S(t) = 30,000 – 2000t to determine the salvage value S(t) of their trucks t years after it is purchases. What was the initial value of the truck and how long until it depreciates completely? 19) _____

A) $20000; 15 years
B) $32,000; 16 years
C) $30,000; 15 years
D) $30,000; 30 years

20) Midtown Delivery Service delivers packages which cost $1.90 per package to deliver. The fixed cost to run the delivery truck is $60 per day. If the company charges $6.90 per package, how many packages must be delivered daily to break even? 20) _____

A) 6 packages
B) 31 packages
C) 8 packages
D) 12 packages

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1) A
2) A
3) A
4) B
5) A
6) A
7) B
8) B
9) A
10) B
11) D
12) A
13) B
14) A
15) A
16) C
17) B
18) C
19) C
20) D

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UNIT 0 TOPIC 2 QUIZ

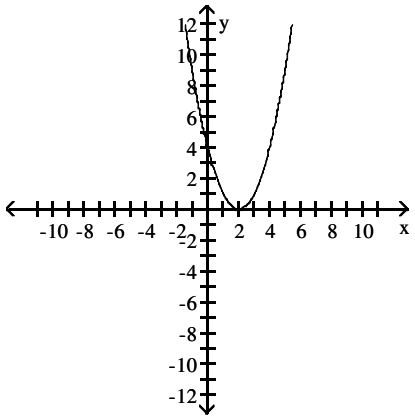
Name_____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Choose the graph that matches the equation.

1) $y = (x + 2)^2$ 1) _____

A)



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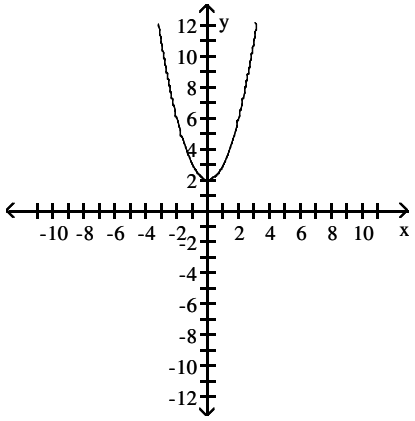

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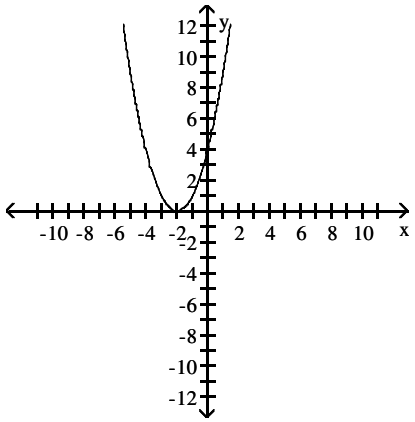

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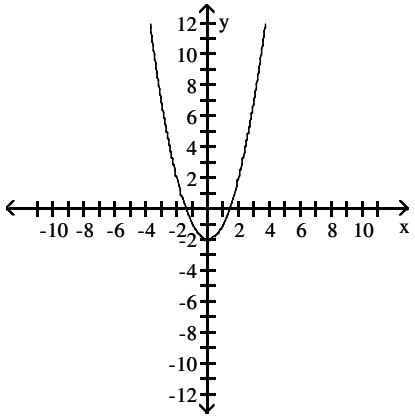
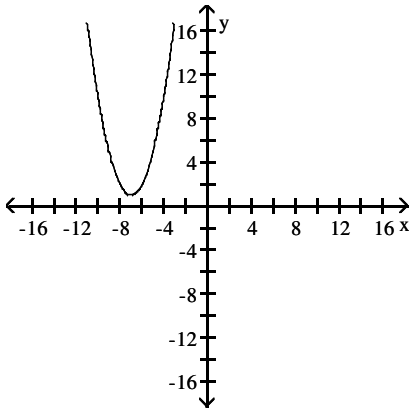
D)



2) $y = (x - 7)^2 + 1$ 2) _____

A)



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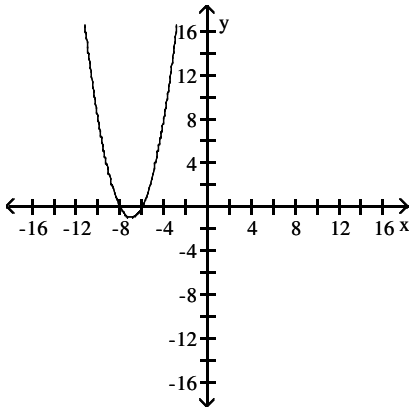

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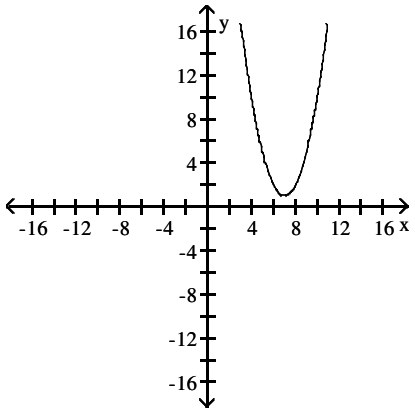
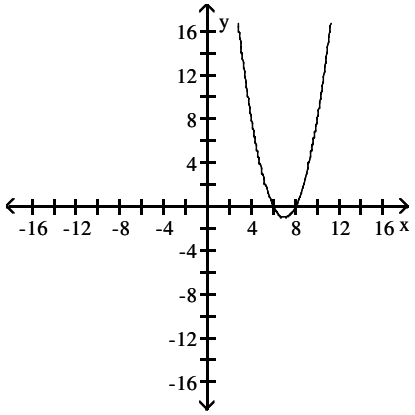
C)

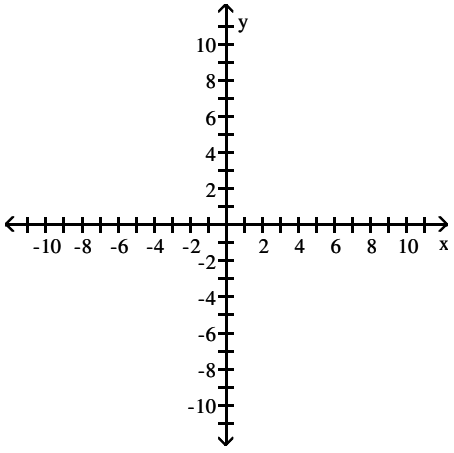


D)



Determine the vertex of the quadratic function. Graph the function and state the domain and range.

3) $y = (x + 6)^2$ 3) _____



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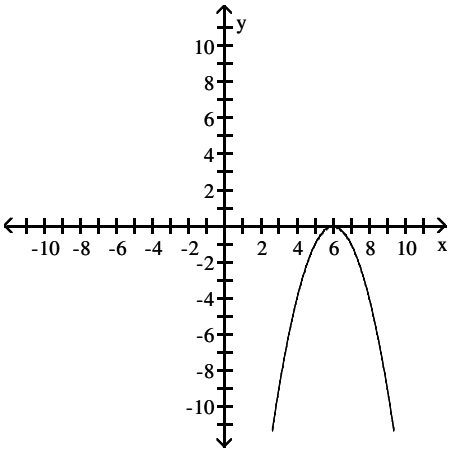
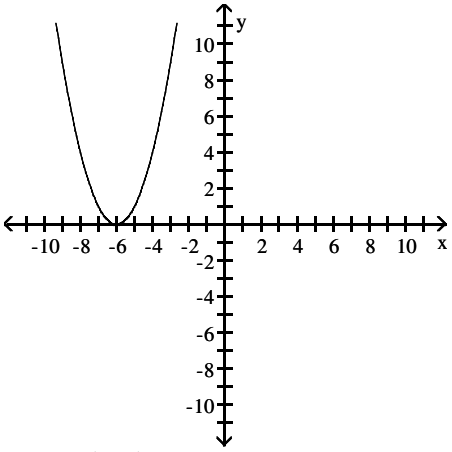
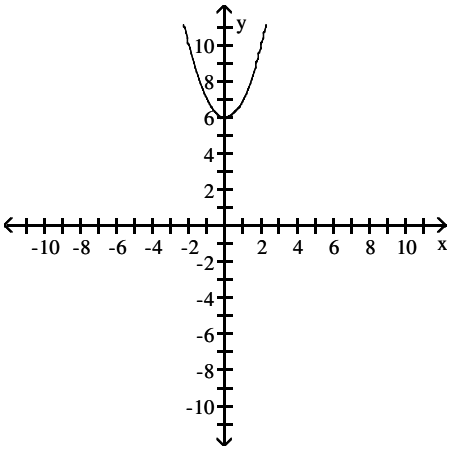
A) vertex: (6, 0)
domain: reals
range: $y \le 0$



B) vertex: (−6, 0)
domain: reals
range: $y \ge 0$



C) vertex: (0, 6)
domain: reals
range: $y \ge 6$



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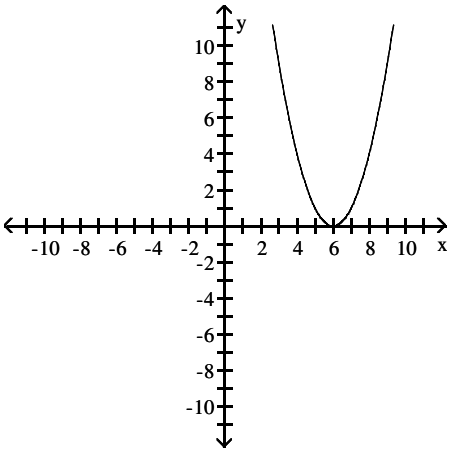
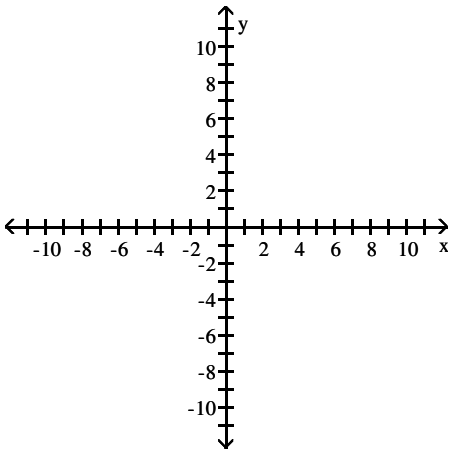
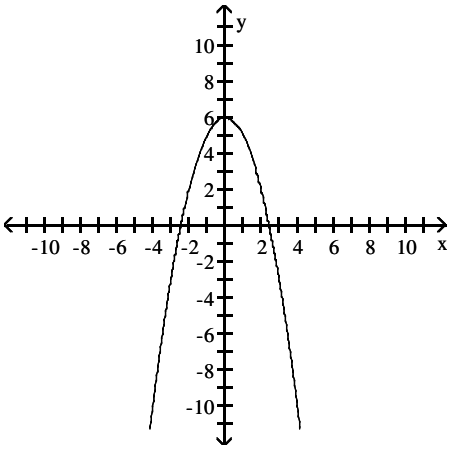
D) vertex: (6, 0)
domain: reals
range: $y \geq 0$



4) $y = x^2 + 6$ 4) _____



A) vertex: (0, 6)
domain: reals
range: $y \leq 6$



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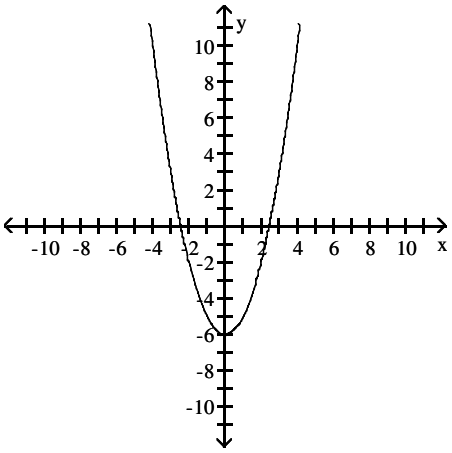
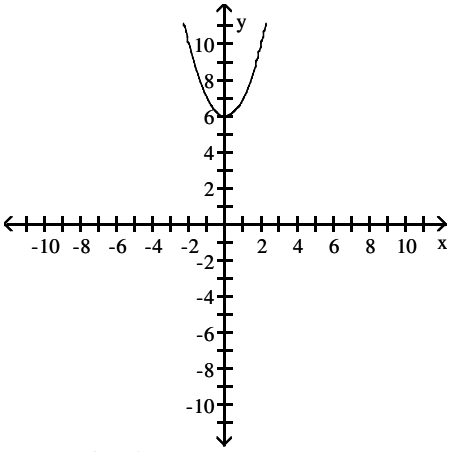
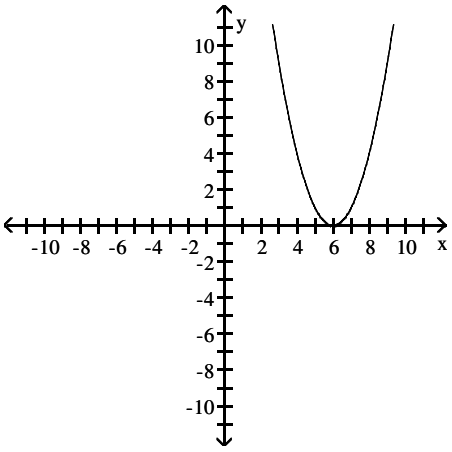
B) vertex: (0, −6)
domain: reals
range: y ≥ −6



C) vertex: (0, 6)
domain: reals
range: y ≥ 6



D) vertex: (6, 0)
domain: reals
range: y ≥ 0



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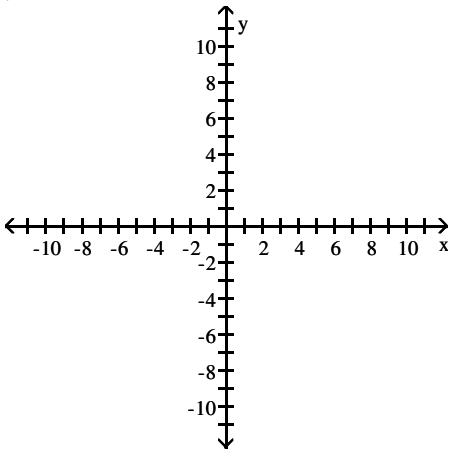
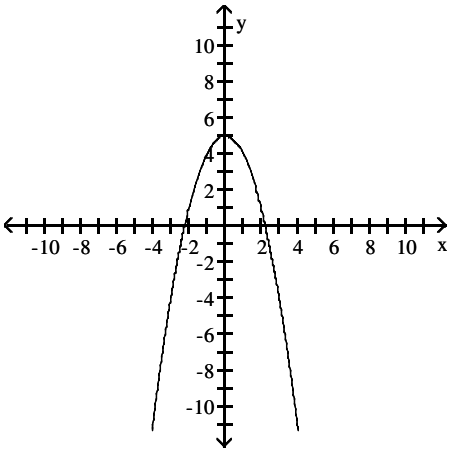
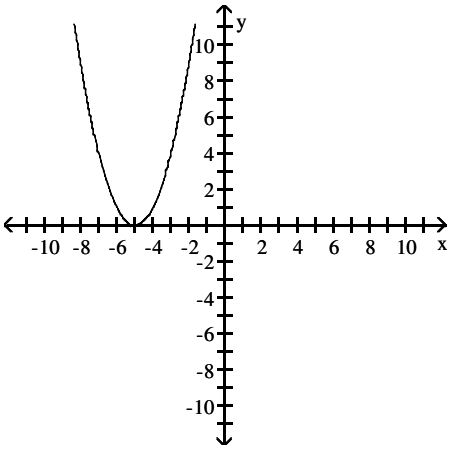
5) $y = -5 - x^2$ 5) _____



A) vertex: (0, 5)
domain: reals
range: $y \leq 5$



B) vertex (−5, 0)
domain: reals
range: $y \geq 0$



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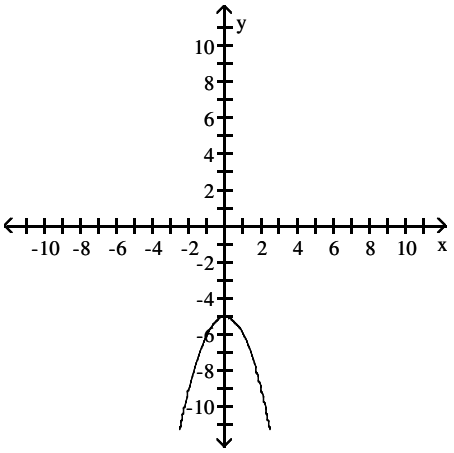
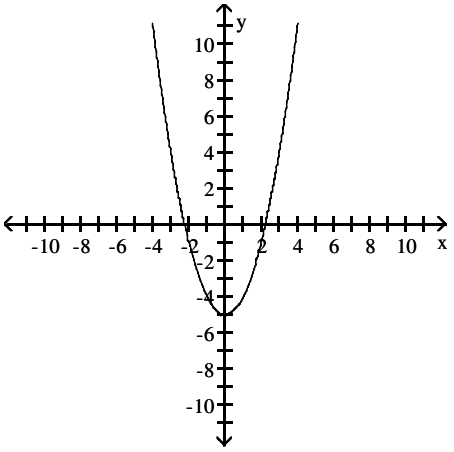
C) vertex: (0, −5)
domain: reals
range: $y \leq -5$

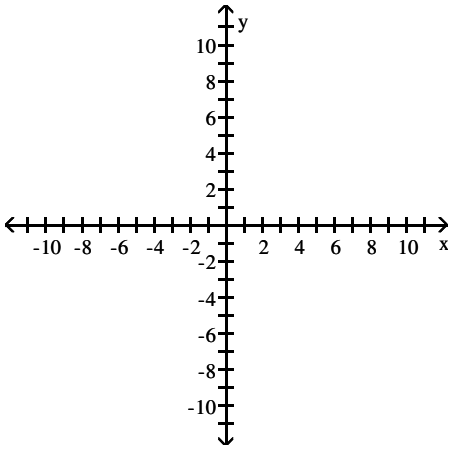


D) vertex: (0, −5)
domain: reals
range: $y \geq -5$



Determine the point of inflection of the cubic function and graph the function.

6) $y = (x + 7)^3$ 6) _____



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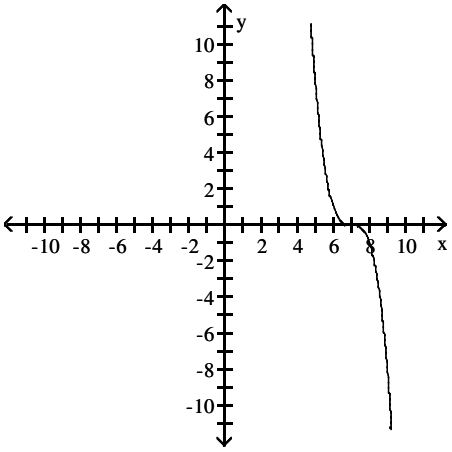
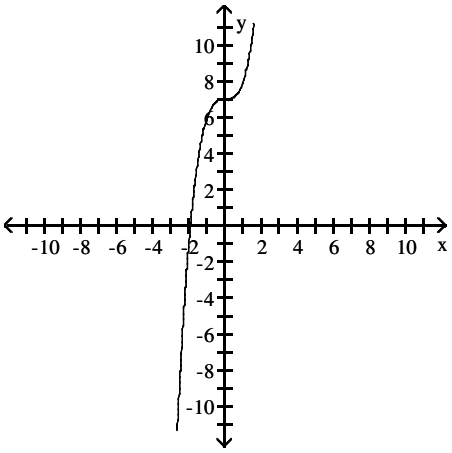
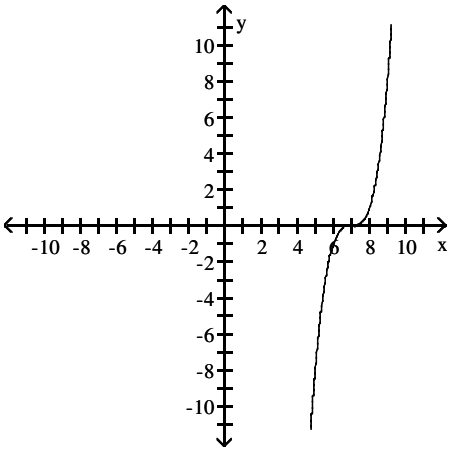
A) (7, 0)



B) (0, 7)



C) (7, 0)



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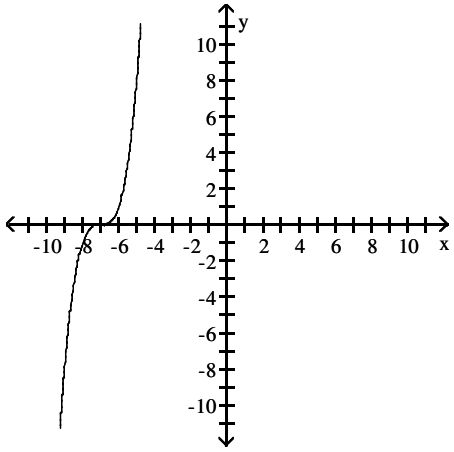
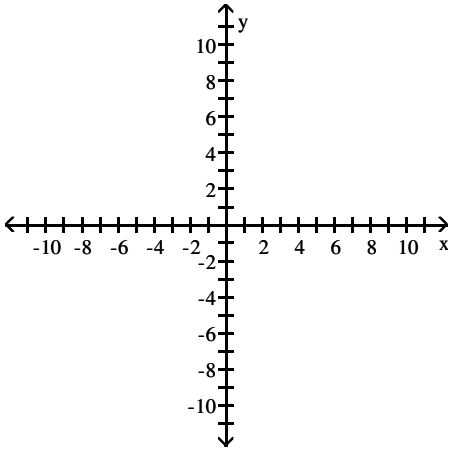
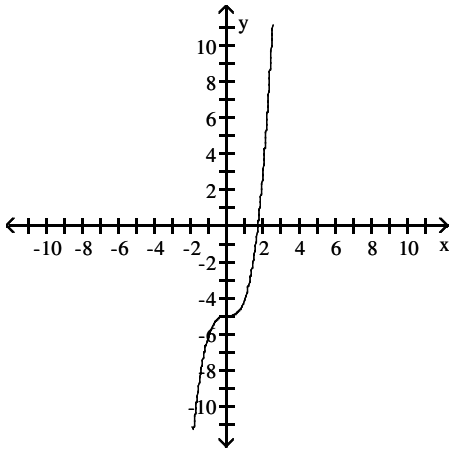
D) (−7, 0)



7) $y = x^3 + 5$ 7) _____



A) (0, −5)



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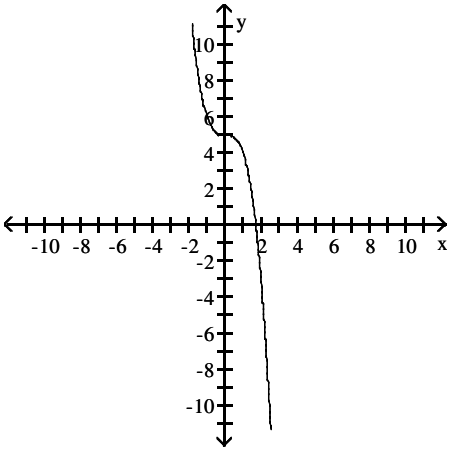
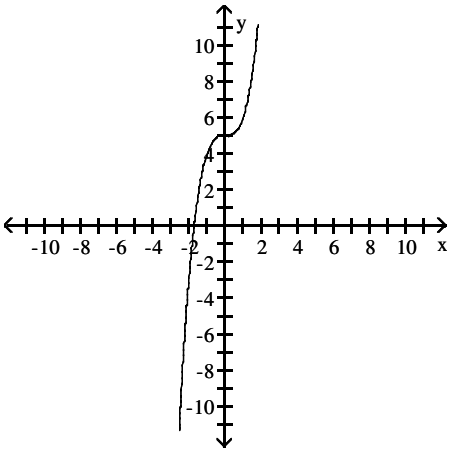
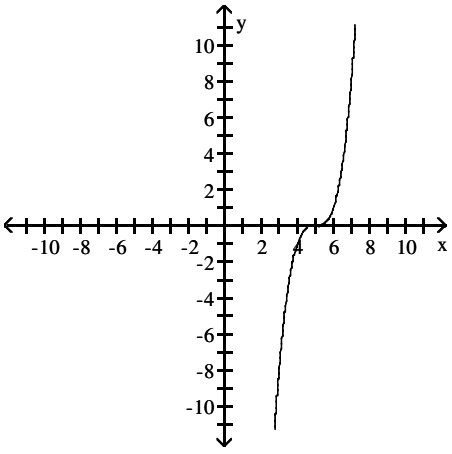
B) (0, 5)



C) (0, 5)



D) (5, 0)



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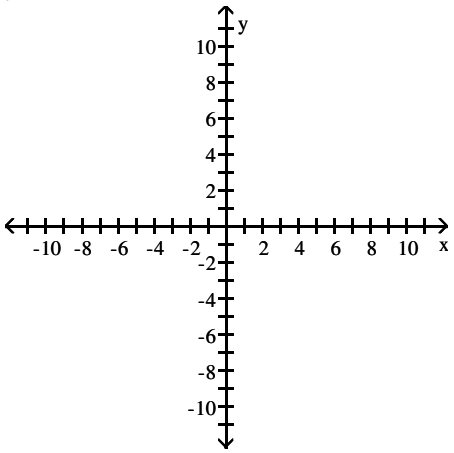
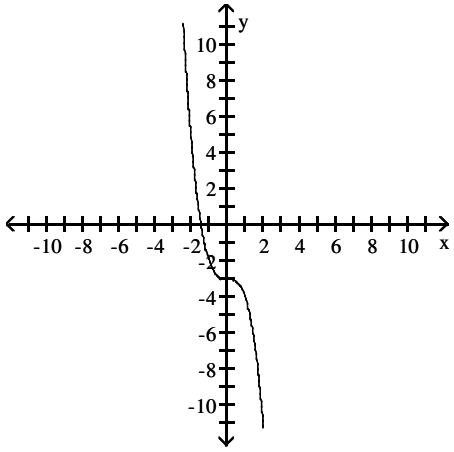
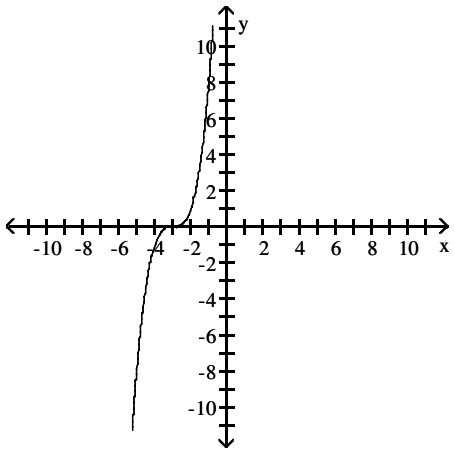
8) $y = x^3 - 3$ 8) _____



A) (0, −3)



B) (−3, 0)



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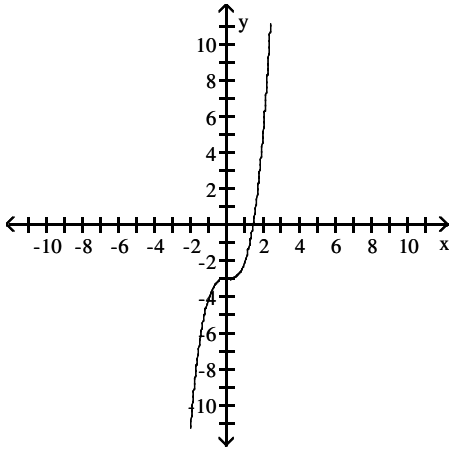
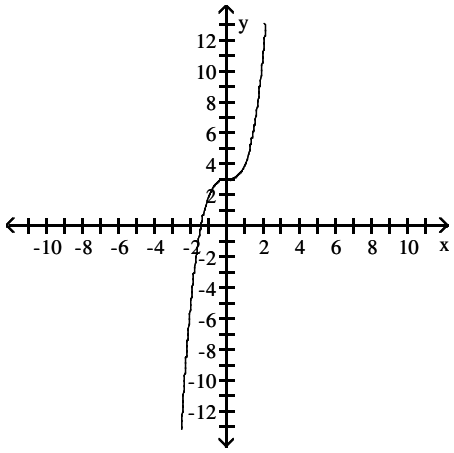
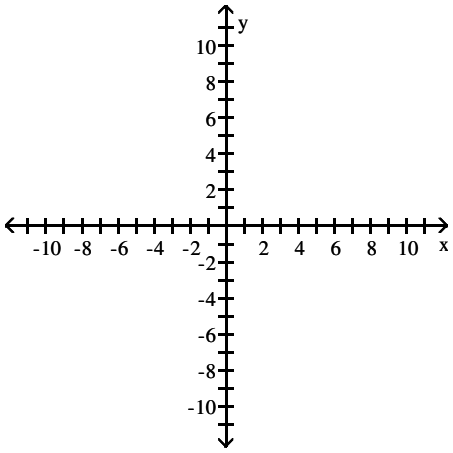
C) (0, –3)



D) (0, 3)



9) $y = (x - 6)^3 - 4$ 9) _____



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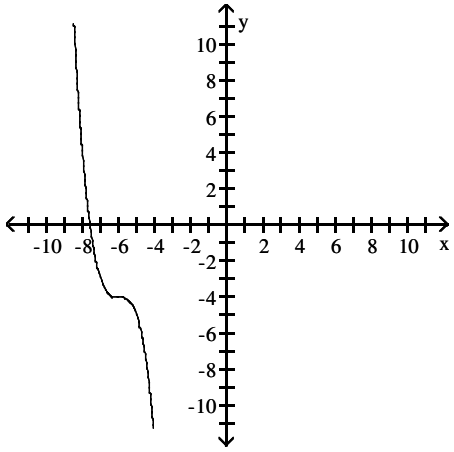
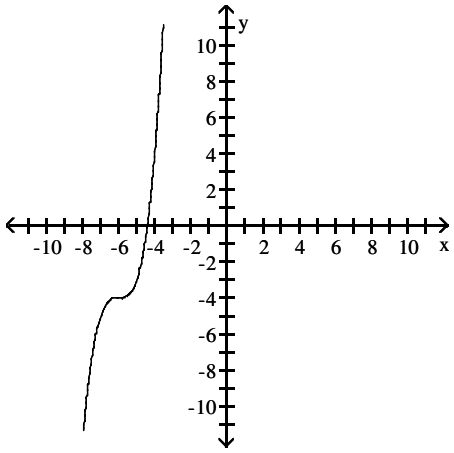
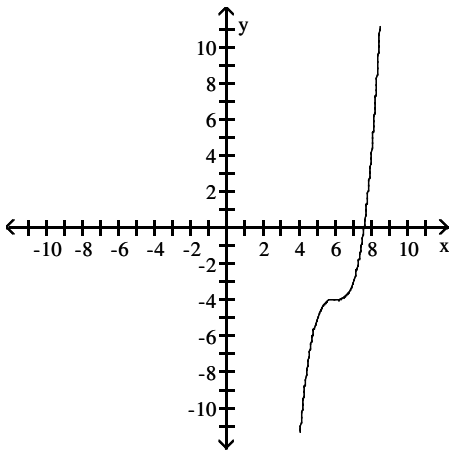
A) (−6, −4)



B) (−6, −4)



C) (6, −4)



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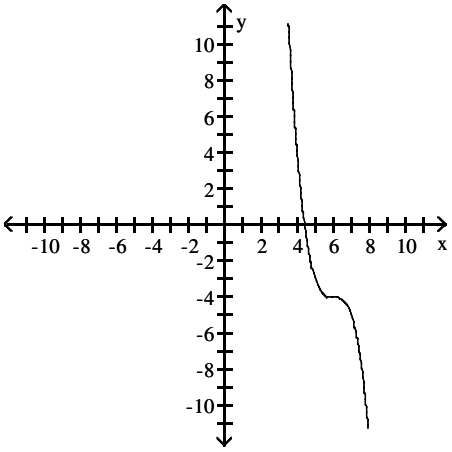
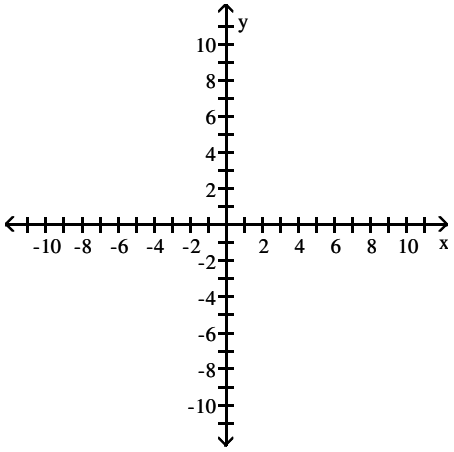
D) (6, −4)

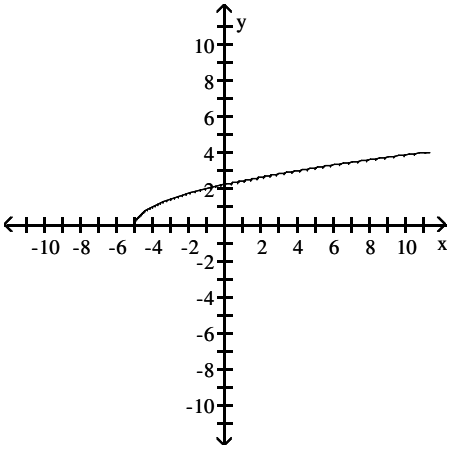


Draw the graph of the square–root function. State the domain and range.

10) $f(x) = \sqrt{x - 5}$ 10) _____



A) domain: $x \geq -5$
range: $y \geq 0$



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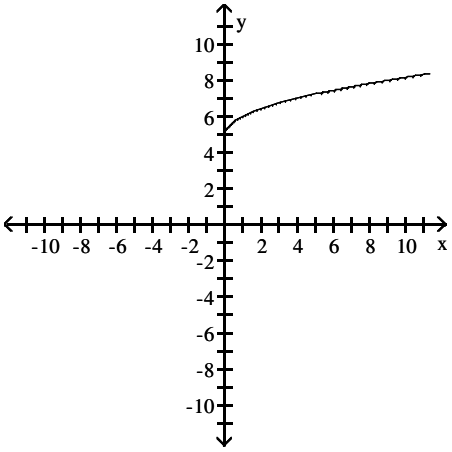
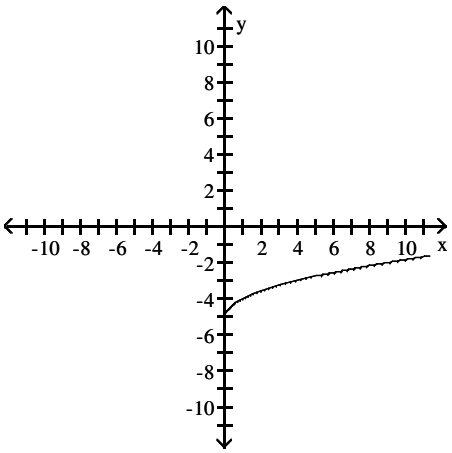
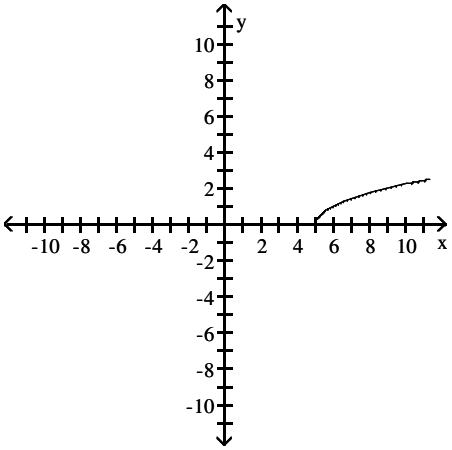
B) domain: $x \geq 0$
range: $y \geq 5$



C) domain: $x \geq 0$
range: $y \geq -5$



D) domain: $x \geq 5$
range: $y \geq 0$



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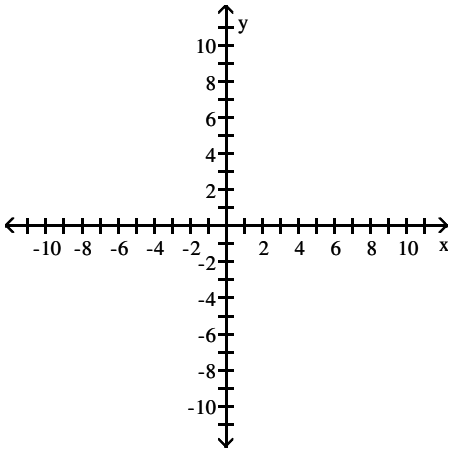
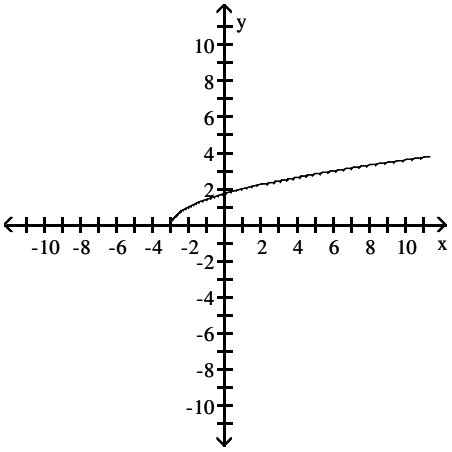
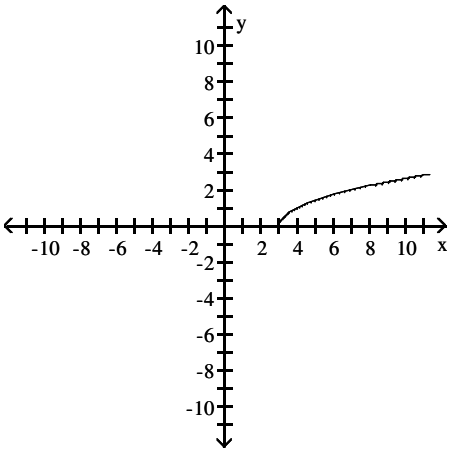
11) $f(x) = \sqrt{x} - 3$ 11) _____



A) domain: $x \geq -3$
range: $y \geq 0$



B) domain: $x \geq 3$
range: $y \geq 0$



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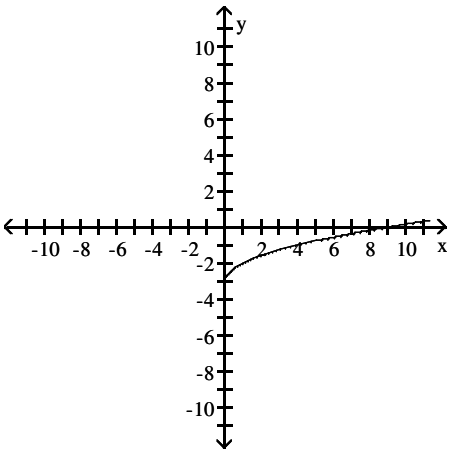
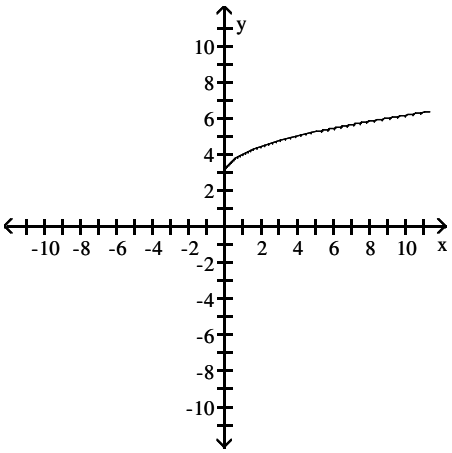
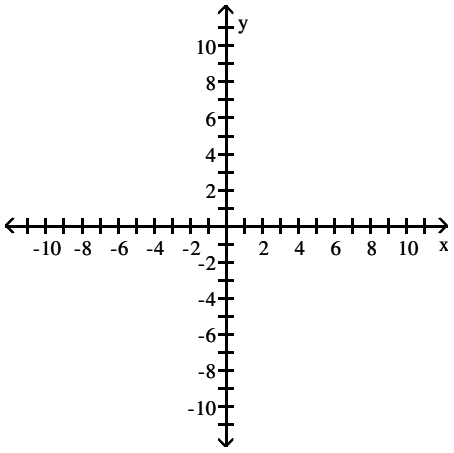
C) domain: $x \geq 0$
range: $y \geq -3$



D) domain: $x \geq 0$
range: $y \geq 3$



12) $y = 6 + \sqrt{2 - x}$ 12) _____



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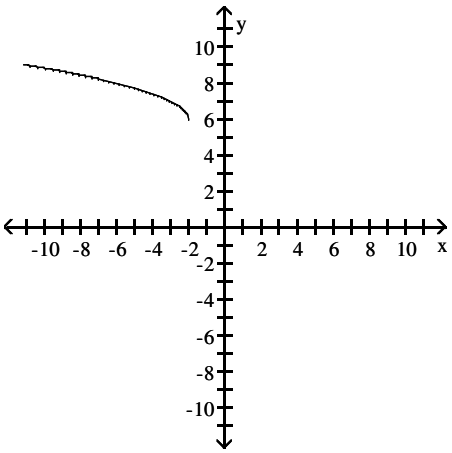
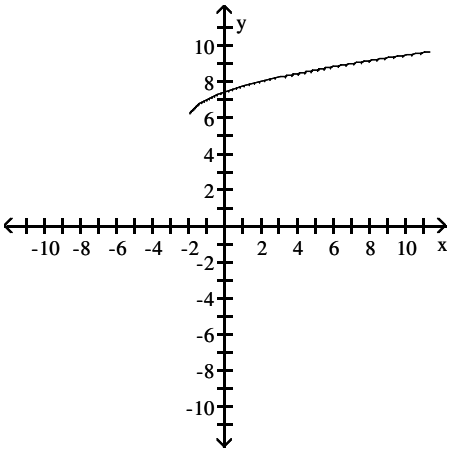
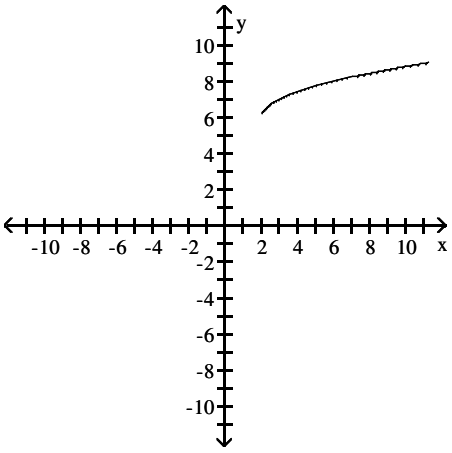
A) domain: $x \leq -2$
range: $y \geq 6$



B) domain: $x \geq -2$
range: $y \geq 6$



C) domain: $x \geq 2$
range: $y \geq 6$



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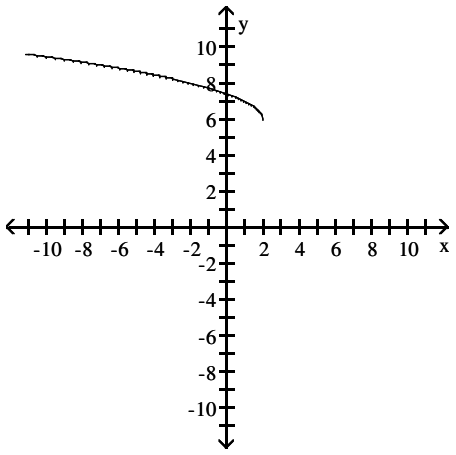
D) domain: $x \leq 2$
range: $y \geq 6$



Solve the problem.

13) Market supply and market demand, in hundreds of thousands, for a certain book are given by $S(x) = x - 5$ and $D(x) = \sqrt{2x + 5}$, where x is the cost of the book. Find the equilibrium point and interpret its meaning. 13) _____
A) Supply equals demand if the cost of the book is \$10.
B) Supply equals demand if the cost of the book is \$5.
C) The company will break even if the cost of the book is \$5.
D) The company will break even if the cost of the book is \$2 or \$10.

14) The time T in seconds for a pendulum of length L feet to make one swing is given by $T = 2\pi\sqrt{\frac{L}{37}}$. Find the time for a pendulum of length 2.4 ft to make one swing. Use 3.14 for π and round to the nearest tenth of a second. 14) _____
A) 1.6 sec B) 2.2 sec C) 2.4 sec D) 1.0 sec

15) The height, in feet, of an object t seconds after being thrown upward from a hot air balloon is given by: 15) _____
$h(t) = -16.1t^2 + 6.3t + 800$,
Predict the height of the object after 5.5 seconds.
A) 278.32 ft B) 347.63 ft C) 746.10 ft D) 0 ft

16) A company uses the quadratic model $y = -11x^2 + 350x$ to estimate the number of units (y) of a new product that will be sold x weeks after its release. How many units of the product can they expect to sell 8 weeks after release? 16) _____
A) 3504 units B) 2888 units C) 2712 units D) 2096 units

17) John owns a hotdog stand. He has found that his profit can be modeled by $P(x) = -x^2 + 56x + 75$, where x is the number of hotdogs sold. How many hotdogs must he sell to maximize his profit? 17) _____
A) 56 hotdogs B) 28 hotdogs
C) 47 hotdogs D) 75 hotdogs

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18) In one U.S. city, the quadratic function $A(x) = 0.0041x^2 - 0.48x + 36.42$ models the median age, A, at which men were first married x years after 1900. Find the vertex of the equation and interpret its meaning. 18) _____

A) (59, 20.9); The median age at which men were first married reached a minimum of 20.9 years in 1959.

B) (59, 22.4); The median age at which men were first married reached a minimum of 22.4 years in 1959.

C) (71, 27.1); The median age at which men were first married reached a maximum of 27.1 years in 1971.

D) (59, 22.4); The median age at which men were first married reached a maximum of 22.4 years in 1959.

19) April shoots an arrow upward into the air at a speed of 32 feet per second from a platform that is 30 feet high. The height of the arrow after t seconds is given by the function $h(t) = -16t^2 + 32t + 30$. What is the maximum height of the arrow? 19) _____

A) 29 ft B) 16 ft C) 30 ft D) 46 ft

A function f(x) is given. By using your graphing calculator to estimate the x–intercepts of the graph of the function, estimate the real solutions to the equation f(x) = 0. Round solutions to three decimal places if necessary.

20) $f(x) = x^4 - 13x^2 - 48$ 20) _____

A) $x = -16, 3$ B) $x = 4$

C) $x = -\sqrt{3}, \sqrt{3}$ D) $x = -4, 4$

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Answer Key
Testname: UNIT 0 TOPIC 2 QUIZ

1) C
2) C
3) B
4) C
5) C
6) D
7) C
8) C
9) C
10) D
11) C
12) D
13) A
14) A
15) B
16) D
17) B
18) B
19) D
20) D

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