Ultimate IT Test Preparation Material

K-12
CCHS-Functions
Common Core High School: Functions (Common Core State Standards Initiative)

- **Up to Date products, reliable and verified.**
- **Questions and Answers in PDF Format.**

Full Version Features:

- **90 Days Free Updates**
- **30 Days Money Back Guarantee**
- **Instant Download Once Purchased**
- **24 Hours Live Chat Support**

For More Information:

https://www.testsexpert.com/

- **Product Version**

Latest Version: 6.0

Question: 1

The function f is defined as $f(x) = x^2 - 2$. Its domain is all real numbers, and its range is $f(x) \geq -2$. Which of the following is true of f?

A. If $x < -2$, then $f(x)$ is undefined.
B. It is defined when x is negative.
C. The range of the function is $f(-2)$.
D. The value of $f(-2)$ is undefined.

Answer: B

Explanation:

The function f assigns to each element of the domain exactly one element of the range. Consequently, if x is any real number (including negative numbers), then the value of $f(x)$ is in the range, $f(x) \geq -2$. Therefore, the correct answer is choice B. On the other hand, choice A is incorrect because f is defined for all negative values of x, including ones less than -2. Choice C is incorrect because the range of f is $f(x) \geq -2$, not $f(-2)$. Finally, choice D is incorrect because the value of $f(-2)$ is defined since $x = -2$ is in the domain of f.

Question: 2

If $g(x) = 2x^2 - x + 3$, evaluate g(4).

A. $g(4) = 7$
B. $g(4) = 31$
C. $g(4) = 63$
D. $g(4) = 67$

Answer: B

Explanation:

To evaluate $g(4)$, substitute 4 for every occurrence of x in the equation $g(x) = 2x^2 - x + 3$. Then simplify the result using order of operations:

$$\begin{aligned} g(4) &= 2(4)^2 - (4) + 3 \\ &= 2(16) - 4 + 3 \\ &= 32 - 4 + 3 \\ &= 31 \end{aligned}$$

Question: 3

The function $V(r) = \frac{4}{3}\pi r^3$ gives the volume of a sphere of radius r. What is the volume of a sphere of radius 3?

A. 12π
B. 27π
C. 36π
D. 108π

Answer: C

Explanation:

The volume will be given by the expression $V(3)$. To calculate this value, substitute 3 for r in the equation $V(r) = \frac{4}{3}\pi r^3$. Then simplify the result using order of operations:

$$\begin{aligned} V(3) &= \frac{4}{3}\pi(3)^3 \\ &= \frac{4}{3}\pi \cdot 27 \\ &= 36\pi \end{aligned}$$

Therefore, the volume of the sphere is 36π.

Question: 4

Calculate the sixth term of the sequence defined as $f(0) = f(1) = 1; f(n + 1) = f(n) + 2 \cdot f(n - 1)$ for $n \geq 2$.

A. 8
B. 11
C. 21
D. 41

Answer: C

Explanation:

Since the function is defined recursively, you need to calculate all of the first six terms. The first and second terms are already given in the problem as $f(0) = 1$ and $f(1) = 1$. To calculate the third term, $f(2)$, write 2 as $(n + 1)$, or substitute 1 for n into the equation $f(n + 1) = f(n) + 2 \cdot f(n - 1)$:

$$\begin{aligned} f(1 + 1) &= f(1) + 2f(1 - 1) \\ f(2) &= f(1) + 2f(0) \end{aligned}$$

Since $f(0) = 1$ and $f(1) = 1$, substitute 1 for $f(0)$ and 1 for $f(1)$, and then simplify the result:

$$\begin{aligned} f(2) &= (1) + 2(1) \\ &= 3 \end{aligned}$$

Thus, the third term is 3. To calculate the fourth term, $f(3)$, write 3 as $(n + 1)$, or substitute 2 for n, 1 for $f(1)$, and 3 for $f(2)$ into the equation $f(n + 1) = 2 \cdot f(n) + f(n - 1)$ and simplify the result:

$$\begin{aligned} f(2 + 1) &= f(2) + 2f(2 - 1) \\ f(3) &= f(2) + 2f(1) \\ &= 3 + 2(1) \\ &= 5 \end{aligned}$$

Continuing in this way, you will find that the first five terms of the sequence are 1, 1, 3, 5, 11, 21. Therefore, the sixth term of the sequence is 21.

Question: 5

The height of a pendulum (in cm) t seconds after it is released is given by the function h(t). The table below displays the value of h for eight different values of t.

t	0	0.2	0.4	0.6	0.8	1	1.2	1.4
h(t)	10	8	4	2	4	8	10	8

How many seconds after it is released does the pendulum reach its lowest recorded point?

A. After 0.4 seconds
B. After 0.6 seconds
C. After 2 seconds
D. After 4 seconds

Answer: B

Explanation:

The pendulum reaches its lowest point when h is at its minimum. From the table, you can tell that the minimum is 2. Since $h(t) = 2$ when $t = 0.6$, the pendulum reaches its lowest point 0.6 seconds after it is released.

Question: 6

Which of the following would be an appropriate domain for the function P(t), the world population (in billions) in the year t from 1900 to 2000?

A. $1.5 \le t \le 7$
B. $1900 \le t \le 2000$
C. $1.5 \le P(t) \le 7$
D. $1900 \le P(t) \le 2000$

Answer: B

Explanation:

The domain of a function is the set of all possible input values that can be evaluated by a function. In the given function, the input is t, which represents the year (e.g. $t = 1900$ represents the year 1900). Since the function represents the world population from 1900 to 2000, the domain should be $1900 \le t \le 2000$.

Question: 7

Calculate the average rate of change of the function $f(x) = 4x - 7$ from $x = 0$ to $x = 6$.

A. -4
B. $-\frac{5}{3}$
C. $\frac{5}{3}$
D. 4

Answer: D

Explanation:

The average rate of change of a function $f(x)$ from x_1 to x_2 is $\frac{f(x_2)-f(x_1)}{x_2-x_1}$. This formula is as analogous to the one for slope, rewritten in the context of functions. If $x_1 = 0$ and $x_2 = 6$, the average rate of the given function is given by expression below:

$$\frac{f(x_2) - f(x_1)}{x_2 - x_1} = \frac{f(6) - f(0)}{6 - 0}$$

Calculate the values of $f(0)$ and $f(6)$:

$f(0) = 4(0) - 7 = -7$

$f(6) = 4(6) - 7 = 17$

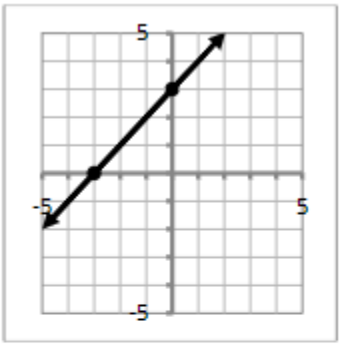
Then substitute these values into the expression for the average rate of change and simplify the result:

$$\frac{f(6) - f(0)}{6 - 0} = \frac{(17) - (-7)}{6 - 0}$$
$$= \frac{24}{6}$$
$$= 4$$

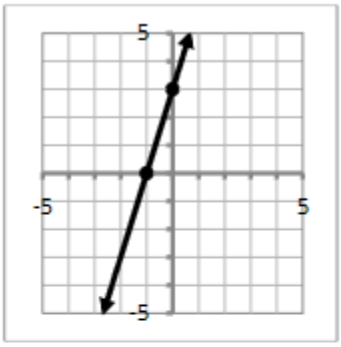
Question: 8

Graph the function $f(x) = -3x + 3$. Show its x- and y-intercepts.

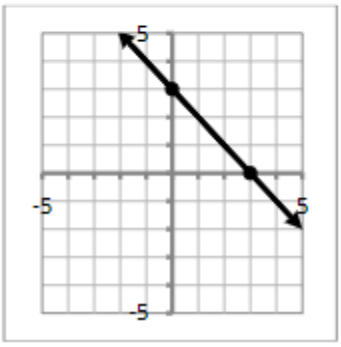
a.



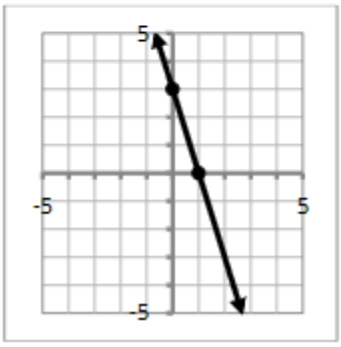
b.



c.



d.



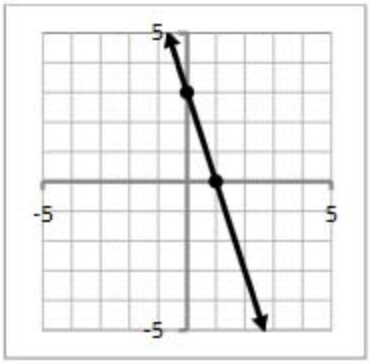
A. Option A
B. Option B
C. Option C
D. Option D

Answer: D

Explanation:
The graph of a linear function is a straight line. To graph the given function, first create a table of values.

x	f(x) = –3x + 3	(x,y)
0	–3(0) + 3 = 3	(0,3)
1	–3(1) + 3 = 0	(–3,0)
2	–3(2) + 3 = –3	(2,0)

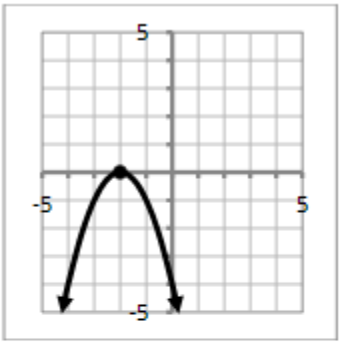
Next plot the three points on a coordinate axis and connect them with a straight line. The x- and y-intercepts are the points where the line passes through the x- and y-axes, respectively.



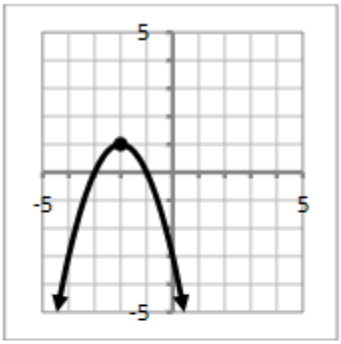
Question: 9

Graph the function $g(x) = -x^2 + 4x - 3$. Show its maximum.

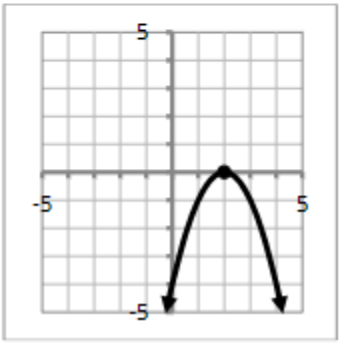
a.



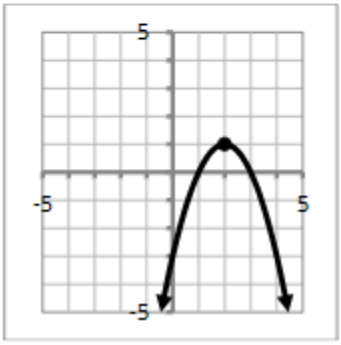
b.



c.



d.



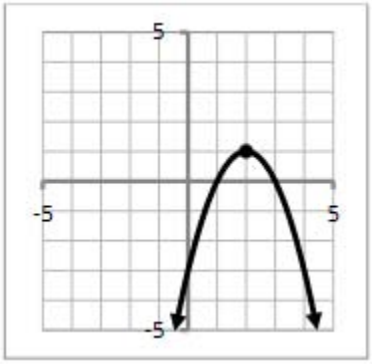
A. Option A
B. Option B
C. Option C
D. Option D

Answer: D

Explanation:
The graph of a quadratic function is a curve. To graph the given function, first create a table of values.

x	$g(x) = -x^2 + 4x - 3$	(x,y)
0	$-(0)^2 + 4(0) - 3 = -3$	(0,–3)
1	$-(1)^2 + 4(1) - 3 = 0$	(1,0)
2	$-(2)^2 + 4(2) - 3 = 1$	(2,1)
3	$-(3)^2 + 4(3) - 3 = 0$	(3,0)
4	$-(4)^2 + 4(4) - 3 = -3$	(4,–3)

Next plot the five points on a coordinate axis and connect them with a curve. The graph will be an upside-down u-shaped parabola. Plot the maximum, which is the highest point on the graph.



For More Information – **Visit link below:**

https://www.testsexpert.com/

16$ Discount Coupon: 9M2GK4NW

Features:

- Money Back Guarantee……..……...….

- 100% Course Coverage……

- 90 Days Free Updates……

- Instant Email Delivery after Order……