Algebra Quick Quiz 01032024

Question 1.

The equation for the volume of a cylinder is $V = \pi r^2 h$. The positive value of r, in terms of h and V, is

(1) $r = \sqrt{\frac{V}{\pi h}}$

(2) $r = \sqrt{V\pi h}$

(3) $r = 2V\pi h$

(4) $r = \frac{V}{2\pi}$

Question 2

Which equation has the same solutions as $x^2 + 6x - 7 = 0$?

(1) $(x + 3)^2 = 2$

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

(3) $(x - 3)^2 = 16$

(4) $(x + 3)^2 = 16$

Question 3.

An astronaut drops a rock off the edge of a cliff on the Moon. The distance, $d(t)$, in meters, the rock travels after t seconds can be modeled by the function $d(t) = 0.8t^2$. What is the average speed, in meters per second, of the rock between 5 and 10 seconds after it was dropped?

(1) 12

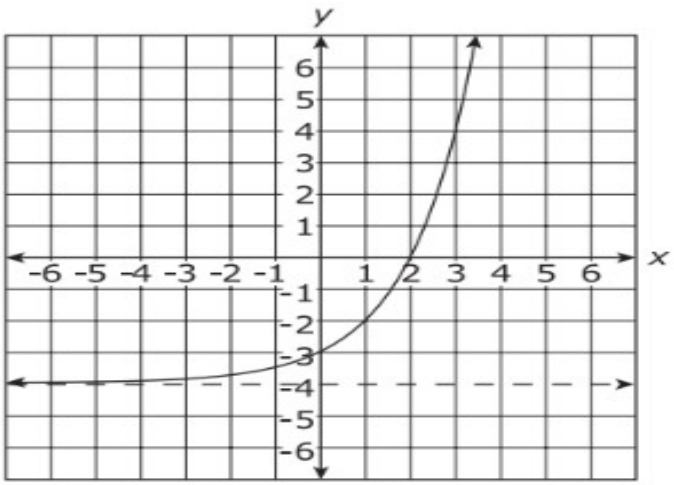
(2) 20

(3) 60

(4) 80

Question 4.

What is the domain of the graphed function?



A. all real values

B. all real values except −4

C. all real values greater than −4

D. all real values less than 4

Question 5.

When factored completely, the expression $p^4 - 81$ is equivalent to

(1) $(p^2 + 9)(p^2 - 9)$

(2) $(p^2 - 9)(p^2 - 9)$

(3) $(p^2 + 9)(p + 3)(p - 3)$

(4) $(p + 3)(p - 3)(p + 3)(p - 3)$

Question 6.

In 2013, the United States Postal Service charged \$0.46 to mail a letter weighing up to 1 oz. and \$0.20 per ounce for each additional ounce. Which function would determine the cost, in dollars, $c(z)$, of mailing a letter weighing z ounces where z is an integer greater than 1?

(1) $c(z) = 0.46z + 0.20$

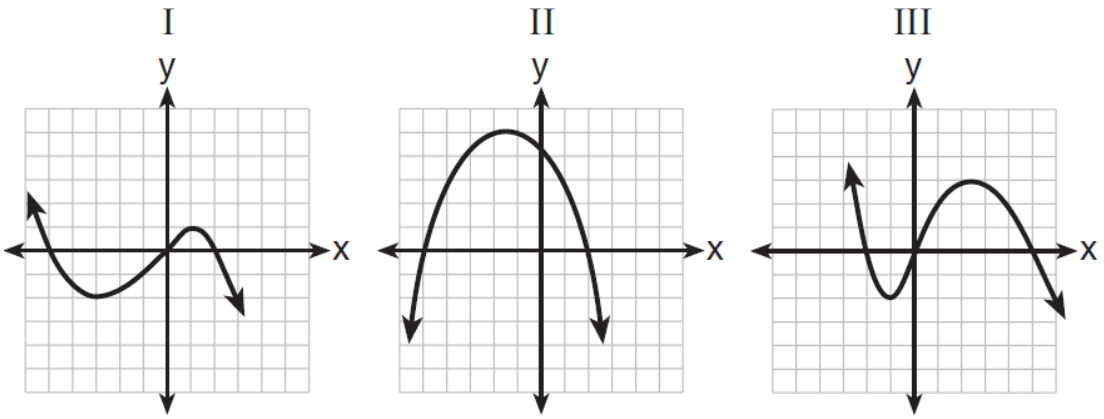
(2) $c(z) = 0.20z + 0.46$

(3) $c(z) = 0.46(z - 1) + 0.20$

(4) $c(z) = 0.20(z - 1) + 0.46$

Question 7.

A polynomial function contains the factors x, $x - 2$, and $x + 5$. Which graph(s) below could represent the graph of this function?



(1) I, only
(2) II, only
(3) I and III
(4) I, II, and III

Question 8.

Function $f(x)$ is shown.

$$f(x) = (x^2 - 49)(x^2 + 6x + 9)$$

What are the zeros of the function $f(x)$?

A. 3, 7

B. −3, 3, 7

C. −7, −3, 7

D. −7, −3, 3, 7

Question 9.

Mr. Kelly buys a total of 40 boxes of pens and pencils for his class. Each box of pens costs $5. Each box of pencils costs $2. Mr. Kelly spends a total of $131 on the pens and pencils.

Which equations form a system of equations that can be used to determine the number of boxes of pens, x, and the number of boxes of pencils, y, that Mr. Kelly buys? Select **two** correct answers.

A. $x + y = 40$

B. $x + y = 131$

C. $5x + 2y = 40$

D. $2x + 5y = 40$

E. $5x + 2y = 131$

F. $2x + 5y = 131$

Question 10.

Solve the equation $4x^2 - 12x = 7$ algebraically for x.

Express your answers as fractions.
If you use graphs you will not be given any credit.
If you do not show your working you will not be given any credit.

Bonus Question

Question 11 a.

Concert tickets cost $3 for students and $5 for adults. There are s student tickets sold and n adult tickets sold.

Which expression represents the total number of concert tickets sold?

A. $s+n$

B. $3s+5n$

C. $\frac{s}{3}+\frac{n}{5}$

D. $\frac{s}{5}+\frac{n}{3}$

Question 11 b.

An expression is shown.

$$(x^2-3x+12)+(x^2-4)$$

Which expression is equivalent to the expression shown?

A. x^2-3x+8

B. $x^2-7x+12$

C. $2x^2-3x+8$

D. $2x^2-7x+12$