

Algebra 2 quick quiz 03072023

Question 1.

The completely factored form of $n^4 - 9n^2 + 4n^3 - 36n - 12n^2 + 108$ is

- (1) $(n^2 - 9)(n + 6)(n - 2)$
- (2) $(n + 3)(n - 3)(n + 6)(n - 2)$
- (3) $(n - 3)(n - 3)(n + 6)(n - 2)$
- (4) $(n + 3)(n - 3)(n - 6)(n + 2)$

Question 2.

What is the solution when the equation $wx^2 + w = 0$ is solved for x , where w is a positive integer?

- (1) -1
- (2) 0
- (3) 6
- (4) $\pm i$

Question 3.

Selected values for the functions f and g are shown in the tables below.

x	f(x)
-3.12	-4.88
0	-6
1.23	-4.77
8.52	2.53
9.01	3.01

x	g(x)
-2.01	-1.01
0	0.58
8.52	2.53
13.11	3.01
16.52	3.29

A solution to the equation $f(x) = g(x)$ is

- (1) 0
- (2) 2.53
- (3) 3.01
- (4) 8.52

Question 4.

The expression $6 - (3x - 2i)^2$ is equivalent to

- (1) $-9x^2 + 12xi + 10$ (3) $-9x^2 + 10$
(2) $9x^2 - 12xi + 2$ (4) $-9x^2 + 12xi - 4i + 6$

Question 5.

A number, minus twenty times its reciprocal, equals eight.
The number is

- (1) 10 or -2 (3) -10 or -2
(2) 10 or 2 (4) -10 or 2

Question 6.

A savings account, S , has an initial value of \$50. The account grows at a 2% interest rate compounded n times per year, t , according to the function below.

$$S(t) = 50\left(1 + \frac{.02}{n}\right)^{nt}$$

Which statement about the account is correct?

- (1) As the value of n increases, the amount of interest per year decreases.
(2) As the value of n increases, the value of the account approaches the function $S(t) = 50e^{0.02t}$.
(3) As the value of n decreases to one, the amount of interest per year increases.
(4) As the value of n decreases to one, the value of the account approaches the function $S(t) = 50(1 - 0.02)^t$.

Question 7.

The solution set for the equation $b = \sqrt{2b^2 - 64}$ is

(1) $\{-8\}$

(3) $\{\pm 8\}$

(2) $\{8\}$

(4) $\{ \}$

Question 8.

Which table best represents an exponential relationship?

x	y
1	8
2	4
3	2
4	1
5	$\frac{1}{2}$

(1)

x	y
8	0
4	1
0	2
-4	3
-8	4

(2)

x	y
0	0
1	1
2	4
3	9
4	16

(3)

x	y
1	1
2	8
3	27
4	64
5	125

(4)

Question 9.

The temperature, in degrees Fahrenheit, in Times Square during a day in August can be predicted by the function $T(x) = 8\sin(0.3x - 3) + 74$, where x is the number of hours after midnight. According to this model, the predicted temperature, to the *nearest degree* Fahrenheit, at 7 P.M. is

(1) 68

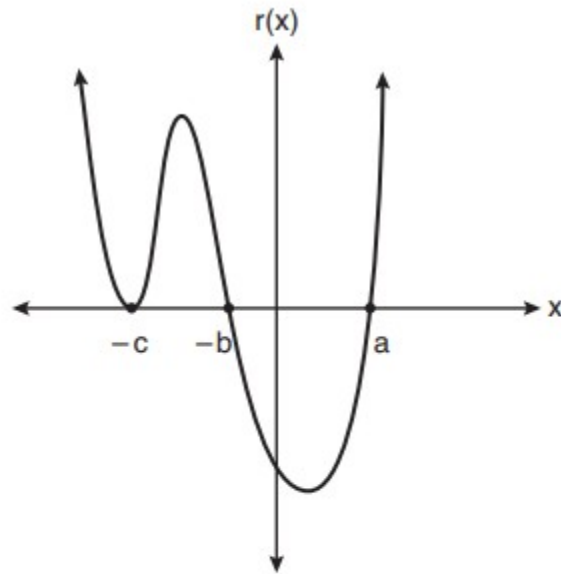
(3) 77

(2) 74

(4) 81

Question 10.

A sketch of $r(x)$ is shown below.



An equation for $r(x)$ could be

- (1) $r(x) = (x - a)(x + b)(x + c)$
- (2) $r(x) = (x + a)(x - b)(x - c)^2$
- (3) $r(x) = (x + a)(x - b)(x - c)$
- (4) $r(x) = (x - a)(x + b)(x + c)^2$

Bonus Question

Question 11a. Please show your work on a separate sheet of paper.

A family compares the costs of renting a truck from two different companies for its 2-day move to another state. The costs are shown in the table.

Truck Rental Costs

Item	Company X	Company Y
base rental charge	\$29.95 per day	\$19.95 per day
mileage charge	59 cents per mile	79 cents per mile
drop-off charge	\$150	included
insurance	\$18 per day	\$26 per day

Part A

Create a model that can be used to determine the rental cost of each truck for the 2-day move. Describe the process you used to determine your model.

Use your model to determine the number of miles when the rental costs of the two trucks will be equal.

Question 11b.

Part B

The family estimates they will travel 750 miles total. In addition to the truck rental cost, they will also need to pay for gasoline. The price of gasoline is \$3.50 per gallon across the states they will be traveling. The truck from Company X averages 10 miles per gallon; the truck from Company Y averages 7 miles per gallon.

Which of the two trucks should the family rent? Provide an answer supported by valid mathematical reasoning and/or calculations.