Algebra 2 Quick Quiz 12092022
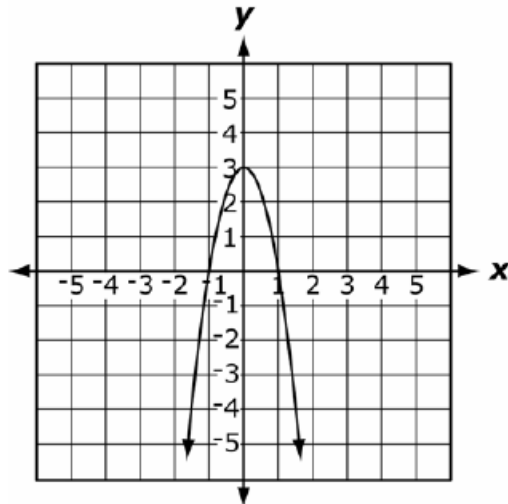
Question 1. DO NOT USE GRAPHING SOFTWARE TO ANSWER THIS QUESTION.

What is the equation of the given parabola?

A $y = -x^2 + 3$

B $y = -3x^2 + 3$

C $y = -x^2 - 2x + 3$

D $y = 3x^2 - 6x + 3$

Question 2
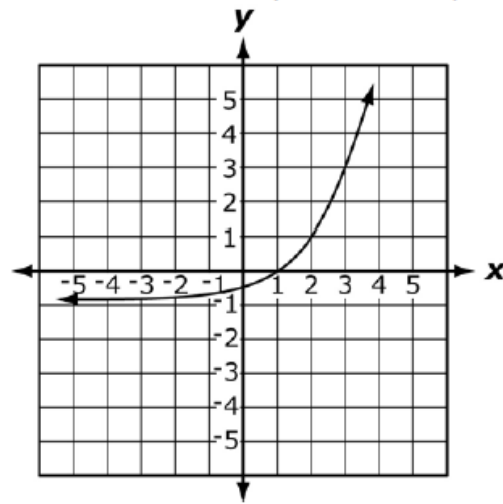
Which function is best represented by the data in this table?

X	0	1	2	3	4
Y	1	3	9	27	81

A $f(x) = x^3$

B $f(x) = 3^x$

C $f(x) = 3x$

D $f(x) = 3x^2$

Question 3.

Which function is best represented by this graph?

A $f(x)=2^{x-1}-1$

B $f(x)=2^{x+1}-1$

C $f(x)=2^x-\dfrac{1}{2}$

D $f(x)=2^{x-1}$

Question 4.

The formula, $r=2^{\frac{\text{-}}{x}}-1$, gives the annual interest rate, r, required for your money to double in x years. If it takes 18 years for your money to double, what was the approximate annual interest rate?

A 2%

B 4%

C 8%

D 18%

Question 5.

Which equation has -1 and 3 as solutions?

A $x^2-2x-3=0$

B $x^2-2x+3=0$

C $x^2+2x-3=0$

D $x^2+2x+3=0$

Question 6.

Which of these is a root of $f(x) = x^3 - 3x^2 - 4x + 12$?
A -3
B 3
C 4
D 12

Question 7.

Given that $(2x-1)$ and $(x+3)$ are factors of the polynomial, $2x^3 + 13x^2 + 17x - 12$, what is the third factor?
A x-4
B x+4
C 3-x
D 3+x

Question 8.

What is the solution set of $10x^2 - x - 3 = 0$?

A $\left\{\dfrac{-1}{2}, \dfrac{3}{5}\right\}$

B $\left\{\dfrac{-3}{5}, \dfrac{1}{2}\right\}$

C $\left\{\dfrac{-3}{2}, \dfrac{1}{5}\right\}$

D $\left\{\dfrac{-1}{5}, \dfrac{3}{2}\right\}$

Question 9.

A rectangular prism has a volume of 120 cubic inches. The length of the prism is 5 inches, the width is (x-2) inches, and the height is (x+3) inches. What are the width and height of the prism?

A width: 3 in., height: 8 in.
B width: 4 in., height: 6 in.
C width: 6 in., height: 4 in.
D width: 8 in., height: 3 in.

Question 10.

What is $(3x^5 - 15x^4 + 4x^3 + 11x^2 - 9x + 2)$ divided by $(x^2 - 5x + 2)$?

A $(3x^3 - 2x + 1)$

B $(3x^3 - 2x^2 + 7)$

C $(3x^3 - 2x^2 + 7x + 26)$

D $(3x^3 - 30x^2 + 160x - 849)$

Bonus Question

Question 11

A city plans to implement a composting program. In the composting program, food waste will be collected from residents and sent to one of these compost collection sites.

Composting Program		
Collection Site	Distance from City Center (miles)	Fee (dollars per ton)
FW Processing	12	50
Hayward Ecology	60	36
Jasper Organics	70	45
Northwestern Recycling	95	40
Milton Recycling	26	65

- Operating the trucks used to transport the waste costs $1.25 per mile driven.
- Each truck can hold 20 tons of waste.

Part A

Based on the given information, determine which composting collection site is cheapest. Describe the steps used to determine which composting site is cheapest and explain any assumptions made. Create a model that can be used to find the total cost of disposing food waste based on the number of tons of composting with the cheapest composting program. Describe the steps used to create your model.

Enter your answer, model, explanation, and assumptions in the space provided.

Part B

During the previous year, the city sent 290,000 tons of waste to landfills. The cost of disposing waste at a landfill is $75 per ton.

This year, the composting program will send 10% of the waste to composting sites instead of sending the waste to landfills. Determine the amount of money the city will save in waste disposal costs based on 290,000 tons of waste using the composting site you chose in Part A.

Show the process you used to determine your answer.

Enter your answer and your work in the space provided.