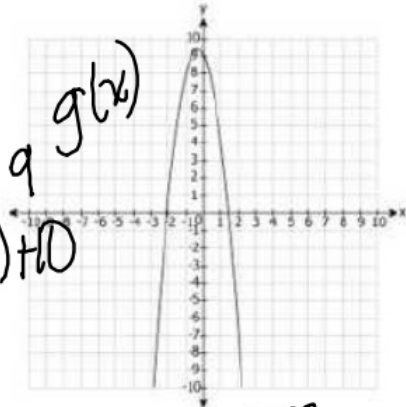1) The function $f(x)$ is listed and the graph of the function $g(x)$ is shown. Which of these statements is true? $f(x) = -x^2 - 2x + 10$

A. $f(x)$ has a maximum value closer to the x-axis.
B. $g(x)$ has a maximum value closer to the x-axis.
C. $f(x)$ has a minimum value closer to the x-axis.
D. $g(x)$ has a minimum value closer to the x-axis.

(handwritten) $g(x)$ g

(handwritten) $\dfrac{-b}{2(a)}$ $\dfrac{2}{2(-1)} = -1$ $-(-1)^2 - 2(-1) + 10$
    11

(handwritten) $1 \cdot 08$

2) Twin sisters, Nydea and Zakeya, decide to save for college. Both deposit $200 into 2 different savings accounts. Nydea's investment is modeled by the exponential equation $A(t) = \underline{200(1.08)^t}$, where $A(t)$ represents the amount of investment after t years. Zakeya's investment is represented by the table.

Time (years)	0	1	2	3	4
Investment ($)	200	210	220.50	231.53	243.11

What is the difference in the percent of increase at which the twins' investments grow?

A. 3%
B. 4%
C. 5%
D. 8%

(handwritten) $N: 8\%$
$Z: \dfrac{210-200}{200} = \dfrac{10}{200} = 5\%$

3) Two functions are represented in the tables.

x	1	2	3	4
y	.5	9	13	17

(handwritten) linear cd:4

x	1	2	3	4
y	1	4	16	64

(handwritten) CR: 4

Which description best matches the functions?

A. Function 1 is exponential, while Function 2 is linear.
B. Function 1 is linear, while Function 2 is exponential.
C. Both functions are exponential.
D. Both functions are linear.

Algebra EOC Practice

4) The table shows a relationship between x and y values.

x	y
0	0.25
1	1
4	64
5	256

What is an exponential function for the table in $y = ab^x$ form?

A. $y = 4\,(0.25)^x$
B. $y = 4\,(1.25)^x$
C. $y = 0.25\,(4)^x$
D. $y = 1.25\,(4)^x$

5) The graph shows the salary comparison of Miguel and Christian, who both work after school washing cars. Miguel's earnings are defined by the function f(x), and Christian's earnings are defined by the function g(x), where x is the total number of hours worked.

After how many hours do Miguel's earnings exceed those of Christian?

A. after 1 hour
B. after 1.5 hours
C. after 2 hours
D. after 2.5 hours

6) The cost of picking strawberries from Berry Nice Farms can be modeled by the function f (x) = 3 + 5x, where (x) represents the number of pounds of strawberries picked. What does the number 5 most likely represent about the cost of picking strawberries at Berry Nice Farms?

A. the maximum number of buckets of strawberries that can be picked
B. the number of hours it will take to pick strawberries
C. the flat fee charged for picking strawberries
D. the price per pound for strawberries

7) Sam builds a model for a 120 meter tall building. The height of the model is 60 cm. What is the scale of the model Sam built?
A. 1 cm = 3 m
B. 1 cm = 4 m
C. 1.5 cm = 3 m
D. 2.5 cm = 4 m

$$\frac{120\,m}{60\,cm} = \frac{2\,m}{1\,cm} = \frac{3\,m}{1.5}$$

8) Which of these has the same root index as $\sqrt[3]{5}$?

A. $8^{\frac{3}{2}}$

$3\sqrt{5}$　　$5^{1/3}$

B. $3^{\frac{1}{2}}$

C. $9^{\frac{1}{5}}$

D. $12^{\frac{1}{3}}$

9) Which statement explains why $(27)^{\frac{1}{3}} = 3$?

A. $27 \div 3 = 9$, and $(9)^{\frac{1}{3}} = 3$

B. $(27)^{\frac{1}{3}} = (3^3)^{\frac{1}{3}} = 3^{3 \times \frac{1}{3}} = 3^1$

C. Since the exponent is a fraction with denominator 3, the result is 3.

D. Because the exponent is fractional, the expression $(27)^{\frac{1}{3}}$ is equivalent to $\frac{1}{\sqrt[3]{27}} = 3$.

10) If the sum of two numbers, n and m, is rational, which statement is true?

A. Both n and m may be rational but do not have to be.
B. Both n and m must be rational.
C. Both n and m must be irrational.
D. One number is rational, and the other is irrational.

$3 + \pi = 6.14$
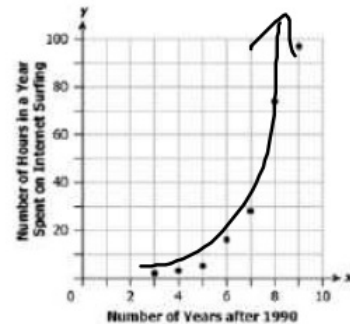$3 + 6 = 9$

11) Which *best* describes $\frac{3}{2} \times \pi$ simplified, and why?

A. The simplified value is irrational because the product of a rational number and a non-zero irrational number is always irrational.
B. The simplified value is irrational because the sum of a rational number and an irrational number is always irrational.
C. The simplified value is rational because the product of a rational number and a non-zero irrational number is always rational.
D. The simplified value is rational because the sum of a rational number and an irrational number is always rational.

12) The plot shows the number of hours in a year an average person spent surfing the Internet (S) from 1993 to 1999, where n is the number of years since 1990.
Which model *best* fits the data?

A. A linear model; the plot resembles a line with a positive slope where, as n increases, the values of S also increase.
B. An exponential model; the smaller values of n correspond to nearly constant values of S, and the large values of n correspond to the large values of S.
C. A linear model; the smaller values of n correspond to small values of S, and the larger values of n correspond to a rapid decrease in the values of S.
D. An exponential model; the plot shows that the number of hours spent on the Internet is decreasing as the number of years increases.

13) Amy and John compared their scores in five different pop quizzes each scored out of a total of 10 points in the table shown. Compute the correlation coefficient between their scores.

Amy's Scores	John's Scores
5	7
4	3
8	8
6	7
6	5

A. -0.76
B. -0.15
C. 0.15
D. 0.76

14) Julie wants to see if studying more for a test improved grades. So she got her classmates to write down how much they studied for a test and correlated it to the results on the test. The correlation was calculated to be 0.80.
What can Julie say about the relationship between time spent studying and grades on a test?
A. There is a weak correlation and thus time spent studying probably has little to do with the grade and is not the cause.
B. There is a strong correlation and thus we can conclude time spent studying must decrease the score on a test.
C. There is a strong correlation and thus we can conclude that the amount of time spent on a test is the reason for the variation of scores.

D. There is a strong correlation between time spent studying and grades. Although the relationship is strong, since we didn't control for other variables we cannot conclude that is the reason for the variation of scores.