Algebra II Mid-Term Review 2013-14

Question 1.		Question	3.			
Latoya drops a ball from 18 feet above the ground. On the first bounce the ball rises to 15 feet and on the second bounce, it rises to 12 feet. What will be the total distance, in feet, the ball has traveled, since Latoya dropped it, when the ball hits the ground the fourth time?		An elementary school started a square rosebush garden four years ago. In the first year, one rosebush was planted. The diagram below shows how the number of rosebushes in the garden increased with each passing year.				
A. 60						
B. 72		Year 1	Year 2	Year 3	Year 4	
C. 90		\$	錢			
D. 102					4444	
Question 2. A theater is designed with 15 seats in the first row, 19 in the second, 23		If the pattern continues, how many rosebushes will be in the garden in Year 7?				
In the third, and so on. If this seating pattern continues, how many seats are in the 30th row?		B. 28				
		C. 49				
A. 127		D. 140				
B. 131						
C. 135						
D. 139						

Question 4.

What is the fourth term in this sequence?

$$\frac{1}{3}, \frac{1}{9}, \frac{1}{27}, \dots$$

$$\frac{1}{36}$$

$$\frac{1}{54}$$

$$\frac{1}{81}$$

$$\frac{1}{243}$$

Question 5.

A.

B.

С.

D.

Let $f(x) = (x + 2)^2$ and $g(x) = x^3$. Which of the following expressions is the result of f(g(x))?

A.
$$x^{5} + 4x^{3} + 4$$

B. $x^{5} + 4x^{4} + 4x^{3}$
C. $x^{6} + 4$
D. $x^{6} + 4x^{3} + 4$

Question 6.

Let $f(x) = x^2 - 2x$ and g(x) = (1 - x). Which of the following expressions is the result of

f(g(x))?

A. $-x^3 + 3x^2 - 2x$

B. $x^2 - 4x + 1$

C. $-x^2 - 4x - 1$

D. $x^2 - 1$

Question 7.

A botanist predicts that the height of a certain tree will increase by 2% every year. If the height of the tree is now 50 feet, what is its predicted height 2 years from now?

- A. 50.04 feet
- B. 51 feet
- C. 52 feet
- D. 52.02 feet

Question 8.

Let $f(x) = (x + 2)^2$ and $g(x) = x^3$. Which of the following expressions is the result of f(g(x))?

A.
$$x^{5} + 4x^{3} + 4$$

B. $x^{5} + 4x^{4} + 4x^{3}$
C. $x^{6} + 4$
D. $x^{6} + 4x^{3} + 4$

Question 9.

Let f(x) = x - 4 and $g(x) = x^2 - 4x + 6$. Which of the following expressions is the result of f(g(x))?

B.
$$x^2 - 4x + 2$$

C.
$$x^3 - 8x^2 + 22x - 24$$

Question 10.

Let $f(x) = 3x^2 + 7x - 4$ and $g(x) = 9x^2 - 5x + 1$. Which equation shows h(x), where h(x) = f(x) - g(x)?

A.
$$h(x) = -12x^2 - 2x + 3$$

B. $h(x) = -6x^2 + 12x - 5$
C. $h(x) = 6x^2 - 12x + 5$
D. $h(x) = 12x^2 + 2x - 3$

Question 11.

What is the inverse, $f^{-1}(x)$, of the function $f(x) = \frac{-2x+5}{3}$?

A.
$$f^{-1}(x) = \frac{2x-5}{3}$$

B. $f^{-1}(x) = \frac{3x-5}{2}$
C. $f^{-1}(x) = \frac{3}{-2x+5}$
D. $f^{-1}(x) = \frac{-3x+5}{2}$

Question 12.

Which of the following equations represents the statement below?

When three times the number *n* is decreased by half of the number t, the difference equals 50.

A.
$$\frac{3n? - ?t}{2} = 50$$

B. $3n? - ?\frac{1}{2}t = 50$
C. $3(n - ?\frac{1}{2}t) = 50$
D. $(3n - ?\frac{1}{2})t = 50$

Ouestion 13.

Which matrix has a 10 as the element in row 2, column 2?

A.

$$\begin{pmatrix} 4 & 10 \\ 8 & 12 \end{pmatrix}$$

 B.
 $\begin{pmatrix} 8 & 12 \\ 4 & 10 \end{pmatrix}$

 C.
 $\begin{pmatrix} 10 & 4 \\ 12 & 8 \end{pmatrix}$

 D.
 $\begin{pmatrix} 12 & 8 \\ 10 & 4 \end{pmatrix}$

Question 14.

The enrollment at Adams High School includes the following: 212 grade 10 girls 191 grade 10 boys 201 grade 11 girls 190 grade 11 boys 195 grade 12 girls 209 grade 12 boys Which matrix correctly represents this enrollment data? Adams H.S. Enrollment Girls Boys Grade 10 212 190 Grade 11 191 195 A Grade 12 201 205 Adams H.S. Enrollment Girls Boys Grade 10 190 212 Grade 11 195 191 B Grade 12 209 201 Adams H.S. Enrollment Girls Boys 212 Grade 10 191 Grade 11 201 190 C. Grade 12 195 209 Adams H.S. Enrollment Girls Boys

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	Grade 10	212	201
	Grade 11	195	191
D.	Grade 12	_ 190	209_

Question 15. What is the inverse of f(x) = 5x + 6? A. $f^{-1}(x) = -5x - 6$ B. $f^{-1}(x) = \frac{x-6}{5}$ C. $f^{-1}(x) = \frac{x-5}{6}$ D. $f^{-1}(x) = 6x + 5$ **Question 16.** Simplify: $-2 \times \begin{vmatrix} 5 & 8 & 3 \\ -1 & 7 & 6 \\ -2 & 4 & 9 \end{vmatrix}$ 10 16 6 2 14 12 4 8 18 $B \begin{bmatrix} -10 & -16 & -6 \\ -2 & -14 & -12 \\ -4 & -8 & -18 \end{bmatrix}$ $\begin{array}{c|cccc} -10 & -16 & -6 \\ 2 & -14 & -12 \\ 4 & -8 & -18 \end{array}$ $\begin{array}{c|cccc} 10 & -16 & -6 \\ 2 & -14 & -12 \\ 4 & -8 & -18 \end{array}$

Question 17.

What is the product of ? $\begin{bmatrix} 1 & 3 \\ -1 & 4 \end{bmatrix}$ and $\begin{bmatrix} 1 & 5 \\ -2 & 0 \end{bmatrix}$? A. $\begin{bmatrix} -5 & 5 \\ -9 & -5 \end{bmatrix}$ B. $\begin{bmatrix} 16 & -2 \\ 19 & 2 \end{bmatrix}$ C. $\begin{bmatrix} 6 & 18 \\ 2 & -8 \end{bmatrix}$ D. $\begin{bmatrix} 1 & 15 \\ 2 & 0 \end{bmatrix}$

Question 18.

Find the product of the two matrices.

D. [369355]

Question 19.

An equation using matrices is shown below.

 $4 \begin{bmatrix} 0 & 7 \\ 6 & 3 \end{bmatrix} = \begin{bmatrix} 0 & 28 \\ ?? & 12 \end{bmatrix}$

What is the missing entry in the matrix?

A. 0

B. 4

C. 12

D. 24

Question 20.

Set *U* = {1, 2, 3, 4, 5, 6, 7}

Set *P* = {1, 3, 5, 7}.

What is the complement of Set *P*?

A. {1, 2, 3, 4, 5, 6, 7}

B. {1, 3, 5, 7}

 $C. \{2, 4, 6\}$

D.Ø

Question 21.

Let Set $A = \{1, 3, 5, 7, 9, 11, 13\}$ and Set $B = \{2, 3, 5, 7, 11, 13\}$. Which set represents A and B?

A. {1, 2, 9, 13}
B. {3, 5, 7, 11}
C. {3, 5, 7, 9, 11}
D. {1, 2, 3, 5, 7, 9, 11, 13}

Question 22.

A fair number cube is rolled. Each face of the cube has a number 1 through 6. What is the probability that the number rolled is either a 3 or 4 on the first try?

A. $\frac{1}{6}$

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

C. $\frac{1}{2}$

D. $\frac{2}{3}$

Question 23.

A fair coin is flipped five times and comes up tails each time. Which of the following describes the event of obtaining tails on the sixth flip?

- A. The event is dependent because the outcomes of the first five flips affect the outcome of the sixth flip.
- B. The event is independent because the outcomes of the first five flips affect the outcome of the sixth flip.
- C. The event is dependent because the outcomes of the first five flips do not affect the outcome of the sixth flip.
- D. The event is independent because the outcomes of the first five flips do not affect the outcome of the sixth flip.

Question 24.

One style of Ohio's auto license plates uses 2 letters, 2 numbers, and then 2 letters. Allowing repeats of numbers and letters, how many possible license plates could be made?

- A. 1,000,000
- B. 32,292,000
- C. 37,015,056
- D. 45,697,600

Question 25.

Abby's Print Shop offers the
following choices for any print job.8 different paper colors4 different ink colors2 different paper thicknessesHow many different combinations of
1 paper color, 1 ink color, and 1
paper thickness are offered at
Abby's Print Shop?A. 8

- **B**. 14
- C. 64
- D. 192

Question 26.

Crystal went to lunch at her favorite restaurant. The lunch special includes a sandwich, a side order, a drink, and a dessert. Diners may choose from 4 different sandwiches, 3 different side orders, 4 different drinks, and 2 different desserts. How many different lunch combinations can Crystal choose from?

A. 13

B. 42

C. 52

D. 96