1. Solve for \( n \):
\[
\frac{x^5 \cdot x^{2n}}{(x^4n)^2} = x^{17}
\]
A) -17  B) -3  C) -2  D) 8.5  E) none of these

2. The growth in a population of a certain rodent at a dump site fits the exponential function \( A(t) = 157e^{0.012t} \), where \( t \) is the number of years since 1993. Estimate the population in the year 2020. Round your answer to the nearest whole rodent.
A) 217  B) 4009  C) 4290  D) 4779  E) none of these

3. Which of the following would translate the graph of a function \( f(x) \) right 5 units?
A) \( f(x) - 5 \)  B) \( f(x) + 5 \)  C) \( f(x - 5) \)  D) \( f(x + 5) \)  E) none of these

4. Which of the following would vertically stretch the graph of a function \( f(x) \) by a factor of 5?
A) \( f(x) - 5 \)  B) \( f(x) + 5 \)  C) \( f(x - 5) \)  D) \( f(x + 5) \)  E) none of these

For questions 5-7, use the graph of function \( g \) at right.

5. What is the domain of \( g \)?
A) (-1, 4)  B) [-1, 4]  C) (-4, 5]  D) [-4, 5)  E) none of these

6. What is the range of \( g \)?
A) (-1, 4)  B) [-1, 4]  C) (-4, 5]  D) [-4, 5)  E) none of these

7. What is \( g(5) - g(-1) \)?
A) 2  B) 3  C) 5  D) 6  E) none of these

8. The menu at Le Steak Bar & Grille has 11 appetizers, 15 entrees, 10 desserts, and 8 beverages. Le Steak offers a dinner special that includes 1 appetizer, 1 entrée, 1 dessert, and 1 beverage. In how many ways can a person order a dinner special at this restaurant?
A) 44  B) 870  C) 13,200  D) 45,644  E) none of these

9. What is the volume of a regular square pyramid with base 6 cm and height 7 cm?
A) 56 cm\(^3\)  B) 84 cm\(^3\)  C) 98 cm\(^3\)  D) 252 cm\(^3\)  E) none of these
10. Which could be the side lengths of a triangle?
A) 4, 12, 17    B) 7, 14, 20    C) 11, 11, 22    D) 17, 18, 36    E) none of these

11. Three percent of the caterpillars in a science lab metamorphosed into butterflies. If Taylor accurately counted 120 butterflies, how many caterpillars were in the original population?
A) 1250    B) 2850    C) 4000    D) 4500    E) none of these

12. Which of the following equations does not represent a function?
A) $y = 3x + 7$    B) $y = -2x^2 - 3x + 0.5$    C) $x = y$    D) $x = 2y^2 - 3y + 2$    E) none of these

13. Western Saddlery gives a 15% discount off the list price of all saddles. The store will also take an additional 30% off the discounted price for the purchase of a floor model. How much would a saddle sell for if it has a list price of $1200 and if it is also a floor model?
A) $540    B) $660    C) $714    D) $1146    E) none of these

14. Which of the following figures does not have point symmetry?
A) circle    B) rectangle    C) square    D) 5-pointed star    E) none of these

15. Determine the next number in the following pattern: 17, 8, 9, -1, __
A) -10    B) -8    C) 8    D) 10    E) none of these

16. Find the slope of a line perpendicular to $-4x + 5y = 23$.
A) -4    B) $-\frac{5}{4}$    C) $\frac{4}{5}$    D) 4    E) none of these

17. Which point value(s) represents the mode?
A) 23, 28    B) 23, 44    C) 32    D) 50    E) none of these

18. Which point value represents the median?
A) 30    B) 32    C) 36    D) 48    E) none of these

19. Which point value represents the third quartile?
A) 23    B) 28    C) 44    D) 50    E) none of these

20. Evaluate: $(6.28 \times 10^6)(7.62 \times 10^{-3})$. Give your answer in scientific notation.
A) $4.78536 \times 10^{-18}$    B) $4.78536 \times 10^4$    C) $47.8536 \times 10^{-2}$    D) $47.8536 \times 10^3$    E) none of these
TEAM 9-10 2018 Answer Key

1. C
2. A
3. C
4. E
5. C
6. B
7. A
8. C
9. B
10. B
11. C
12. D
13. C
14. D
15. D
16. B
17. B
18. B
19. C
20. B