College Algebra

- What is the next term in the geometric sequence 16, -4, 1, $-\frac{1}{4}$, ...? 1.
 - A.
 - В.
 - C.
 - D.
 - Ε.
- 2. A manufacturing company processes raw ore. The number of tons of refined material the company can produce during t days using Process A is $A(t) = t^2 + 2t$ and using Process B is B(t) = 10t. The company has only 7 days to process ore and must choose 1 of the processes. What is the maximum output of refined material, in tons, for this time period?
 - A. 8 10 В.
 - C. 51
 - 63 D.
 - Ε. 70
- For the 2 functions, f(x) and g(x), tables of values are shown below. What is the value 3. of g(f(3))?

x	f(x)	x	g(x)
-5	7	$\overline{-2}$	3
-2	-5	1	-1
1	3	2	-3
3	2	3	-5

- A.
- В. C.
- D.
- E.

- For positive real numbers x, y, and z, which of the following expressions is equivalent 4. to $x^{\frac{1}{2}}v^{\frac{2}{3}}z^{\frac{5}{6}}$?
 - **A.** $\sqrt[3]{xy^2z^3}$
 - В.
 - C.
 - **D.** $\sqrt[6]{x^3y^4z^5}$ **E.** $\sqrt[11]{xy^2z^5}$
- If $A = \begin{bmatrix} 2 & -4 \\ 6 & 0 \end{bmatrix}$ and $B = \begin{bmatrix} -2 & 4 \\ -6 & 0 \end{bmatrix}$, then A B = ?
 - $\begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$ Α.
 - $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ В.
 - $\begin{bmatrix} 0 8 \\ 0 & 0 \end{bmatrix}$ C.
 - $\begin{bmatrix} -4 & 0 \\ -12 & 0 \end{bmatrix}$ D.
 - $\begin{bmatrix} 4 8 \\ 12 & 0 \end{bmatrix}$ E.
- Listed below are 5 functions, each denoted g(x) and each involving a real number constant c > 1. If $f(x) = 2^x$, which of these 5 functions yields the greatest value for f(g(x)), for all x > 1?
 - Α. g(x) = cx
 - $g(x) = \frac{c}{x}$ В.
 - $g(x) = \frac{x}{c}$ C.
 - D.
 - g(x) = x c $g(x) = \log_c x$ Ε.
- If the function f satisfies the equation f(x + y) = f(x) + f(y) for every pair of real numbers x and y, what are the possible values of f(0)?
 - A. Any real number
 - Any positive real number 0 and 1 only В.
 - C.
 - D. 1 only
 - Ε. 0 only

- The imaginary number i is defined such that $i^2 = -1$. What does $i + i^2 + i^3 + \cdots + i^{49}$ equal? 8.
 - A. **B**.
 - -i -1C.
 - 0 D. Ε.
- 9. In an arithmetic series, the terms of the series are equally spread out. For example, in 1 + 5 + 9 + 13 + 17, consecutive terms are 4 apart. If the first term in an arithmetic series is 3, the last term is 136, and the sum is 1,390, what are the first 3 terms?
 - 3, 10, 17 A.
 - 3, 23, 43 B.
 - $3, 36\frac{1}{3}, 70$ C.
 - $3, 69\frac{1}{2}, 136$ D.
 - 3, 139, 1,251 E.

Correct Answers for Sample College Algebra Items

Item #	Correct Answer	
1	C	
2	E	
3	В	
4	D	
5	E	
6	A	
7	E	
8	A	
9	A	