

32. Find the area of the region bounded by the graph of the polar equation $r = 6 \cos \theta$.
- (A) 3π (B) 6π (C) 9π (D) 12π (E) 36π
33. For how many values of x in the interval $[-2\pi, 2\pi]$ does $\tan x = \cos x$?
- (A) 0 (B) 2 (C) 4 (D) 6 (E) 8
34. If $2x - 3y + 4z = 600$ and $3x - 12y + 9z = -198$, then $x + y + z = (?)$
- (A) 556 (B) 666 (C) 1332 (D) 1998 (E) 1999
35. Find the area of the circle whose graph passes through the point $(2, 1)$ and is tangent to the x -axis at $(3, 0)$.
- (A) π (B) 2π (C) 3π (D) 4π (E) 9π
36. In $\triangle ABC$, $AC = 2$, $AB = 4$, and $m\angle BAC = 60^\circ$. Find the area of the triangle.
- (A) 2 (B) 4 (C) 6 (D) $2\sqrt{3}$ (E) $4\sqrt{3}$
37. $A(1, 4, -3)$, $B(7, 2, -1)$, $C(8, 3, -3)$, and $D(2, 5, -5)$ are the vertices of a quadrilateral in 3-dimensional space. Quadrilateral $ABCD$ is which of the following?
- (A) a square
 (B) a rectangle but not a square
 (C) a rhombus but not a square
 (D) a parallelogram but not a rectangle or a rhombus
 (E) a trapezoid but not a parallelogram
38. Let $i = \sqrt{-1}$. All of the coefficients in the equation $x^5 + Ax^4 + Bx^3 + Cx^2 + Dx + E = 0$ are real. The zeros of the equation include 1, i , and $2i$. Which of the coefficients is largest?
- (A) A (B) B (C) C (D) D (E) E
39. If $\log_3 x - 4 \log_2 y = 1$ and $2 \log_3 x + 3 \log_4 y = 12$, then $\log_3 x + \log_2 y = (?)$
- (A) 4 (B) 6 (C) 8 (D) 9 (E) 11
40. $ABCD$ is a trapezoid with $\overleftrightarrow{AB} \parallel \overleftrightarrow{CD}$, $AB = 8$, $CD = 20$, $m\angle ADC = 30^\circ$, and $m\angle BCD = 60^\circ$. Find the distance between the midpoints of the two bases of the trapezoid.
- (A) 2 (B) 4 (C) 6 (D) 8 (E) 10
41. When 20 ounces of ginger ale are added to a mixture of ginger ale and 7-up, the new mixture is 75% ginger ale. When 20 ounces of 7-up are added to the new mixture, the result is $33\frac{1}{3}\%$ 7-up. The percentage of ginger ale in the original mixture is closest to $(?)$
- (A) 30% (B) 40% (C) 50% (D) 60% (E) 70%
42. An equation of the plane which is tangent to the sphere with equation $x^2 + y^2 + z^2 - 2x + 4y = 14$ at $(2, 1, -3)$ is $x + By + Cz + D$. Find $B + C + D$.
- (A) -16 (B) -14 (C) 11 (D) 4 (E) 10