Math Level 2 SAT Practice Test 19

24. A student's final grade in a certain course is the average of his scores on ten tests graded on a scale of 0 to 100, inclusive. For the first six tests, the student's scores averaged 83. If x is the student's final grade for the course, then which of the following is true?

(A) $8.3 \le x \le 83.0$
(B) $49.8 \le x \le 83.0$
(C) $49.8 \le x \le 89.8$
(D) $54.7 \le x \le 89.8$
(E) $83.0 \le x \le 89.8$

25. Which of the following represents the multiplicative inverse of the complex number $2 - i$?

(A) $2 + i$
(B) $i - 2$
(C) $\frac{2+i}{3}$
(D) $\frac{2-i}{3}$
(E) $\frac{2+i}{5}$

26. $\log_3 \sqrt{3} =$

(A) -1
(B) $\frac{1}{3}$
(C) $\frac{1}{2}$
(D) $\frac{2}{3}$
(E) 2

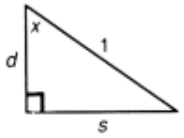
27. If $f(x) = \sqrt[3]{x^3 - 2}$, what is $f^{-1}(2.5)$?

(A) 0.4
(B) 0.9
(C) 1.3
(D) 1.7
(E) 2.3

28. If $0 < x < \frac{\pi}{2}$, then which of the following must be true?

I. $\sin x < \cos x$
II. $\tan x < \cot x$
III. $\sec x < \cos x$

(A) I only
(B) II only
(C) III only
(D) I, II, and III
(E) None



29. In the above figure, if Arcsin s = 2 Arcsin d, then $x =$

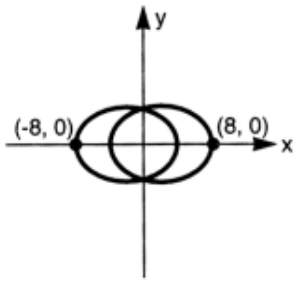
(A) 15°
(B) 30°
(C) 45°
(D) 60°
(E) 75°

30. If, for all n, $2^n + 2^n + 2^n + 2^n = x(2^{n+1})$, then $x =$

(A) 2
(B) 4
(C) 2^n
(D) 2^{2n}
(E) 2^{n+1}

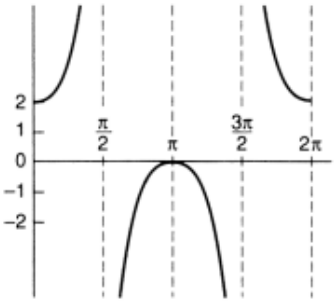
31. If $i^x = 1$, then x could equal

(A) 13
(B) 14
(C) 15
(D) 16
(E) 17



32. The formula for the area enclosed by an ellipse is $A = \pi ab$, where a and b are one–half the lengths of the major and minor axes, respectively. In the figure above, the equation of the circle is $x^2 + y^2 = 12$, then what is the area enclosed by the ellipse?

(A) 62
(B) 87
(C) 103
(D) 117
(E) 131



33. The above figure is a possible graph for which of the following equations?

(A) $y = 2 \sin x$
(B) $y = \sin x + 2$
(C) $y = \csc x + 1$
(D) $y = \csc x - 1$
(E) $y = \sec x + 1$

34. What is $\lim_{x \to 1} \frac{x^2 - 1}{x - 1}$?

(A) -1
(B) 0
(C) 1
(D) 2
(E) The limit does not exist.

35. If $0 \le x \le \pi$ and $\cos x = -1$, then $\cos \frac{x}{2} =$

(A) $-\frac{\sqrt{3}}{2}$
(B) $-\frac{1}{2}$
(C) 0
(D) $\frac{1}{2}$
(E) $\frac{\sqrt{3}}{2}$

36. Which of the following defines the range of the function $f(x) = \frac{1 - x}{x}$?

(A) All real numbers
(B) All real numbers except –1
(C) All real numbers except 0
(D) All real numbers except 1
(E) All real numbers greater than –1

21. D 22. B 23. C 24. C 25. E 26. C 27. A 28. E 29. D 30. A 31. D 32. B 33. E 34. D 35. C 36. B