MATHS

BOOKS - INDEPENDENTLY PUBLISHED MATHS (ENGLISH)

MODEL TEST 2

Mcqs

1. If $f(x) = \frac{x-2}{x^2-4}$ for what value(s) of x does the graph of f(x) have a vertical asymptote?

A. $-2, 0, \text{ and } 2$

B. $-2 \text{ and } 2$

C. 2

D. -2

Answer: D

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2. What is the distance between the points with coordinates $(-3, 4, 1) \text{ and } (2, 7, -4)$?

A. 5.24

B. 7.68

C. 11.45

D. 13

Answer: B

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3. $\log\left(a^2 - b^2\right) =$

A. $\log a^2 - \log b^2$

B. $\log \frac{a^2}{b^2}$

C. $\log \frac{a+b}{a-b}$

D. $\log(a+b) + \log(a-b)$

Answer: D

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4. The domain of the function $f(x) = 4 - \sqrt{x^2 - 9}$ is

A. $x < -3$

B. $x > 0$

C. $x > 3$

D. $x \leq -3$ or $x \geq 3$

Answer: D

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5. If graph of $x + 2y + 3 = 0$ is perpendicular to the graph of $ax + 3y + 2 = 0$, then a equals

A. -6

B. $-\frac{3}{2}$

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

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

Answer: A

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6. The maximum value of 6 sin x cos x is

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

B. 1

C. 2.6

D. 3

Answer: D

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7. If $f(r, \theta) = r\cos\theta,$ then $f(2, 3)$=

A. -3.00

B. -1.98

C. 0.10

D. 1.25

Answer: B

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8. If 5 and -1 are both zeros of the polymonial P(x), then a factor of P(x) is

A. $x^2 - 5$

B. $x^2 - 4x + 5$

C. $x^2 + 4x - 5$

D. $x^2 - 4x - 5$

Answer: D

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9. $i^{14} + i^{15} + i^{16} + i^{17} =$

A. 0

B. 1

C. 2i

D. 1-i

Answer: A

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10. The graph of $y = \sin 2x$ for x between 10° and 350° crosses the x-axis

A. zero times

B. one time

C. two times

D. three times

Answer: D

11. The third term of ann arithmetic sequence is 15, and the seventh term is 23. what is the first term?

A. 1

B. 6

C. 9

D. 11

Answer: D

12. A particular sphere has the property that its surface area has the samme numerical value as its volume. What is the length of the radius of this sphere?

A. 1

B. 2

C. 3

D. 4

Answer: C

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13. $\frac{1}{a} + \frac{1}{b} =$

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

B. $\frac{1}{a+b}$

C. $\frac{2}{a+b}$

D. $\frac{a+b}{ab}$

Answer: D

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14. The pendulum on a clock swings through an angle of 1 radian, and the tip sweeps out ann arc of 12 inches. How long is the pendulum?

A. 3.8 inches

B. 6 inches

C. 7.6 inches

D. 12 inches

Answer: D

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15. What is the domain of the function

$f(x) = 4 - \sqrt{3x^3 - 7}$?

A. $x \geq 1.33$

B. $x \geq 1.53$

C. $x \geq 2.33$

D. $x \leq -1.33$ or $x \geq 1.33$

Answer: A

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16. If $x + y = 90^\circ$, which of the following must be true?

A. cosx=cosy

B. sin x=-sin y

C. tan x=cot y

D. sin x+cos y=1

Answer: C

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17. The graph of the equation $y = x^3 + 5x + 1$

A. Does not intersect the x-axis

B. intersects the x-axis at one and only one point

C. intersects the x-axis at exactly three points

D. intersects the x-axis at more than three points.

Answer: B

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18. The length of the radius of the sphere

$x^2 + y^2 + z^2 + 2x - 4y = 10$ is

A. 3.16

B. 3.38

C. 3.46

D. 3.87

Answer: D

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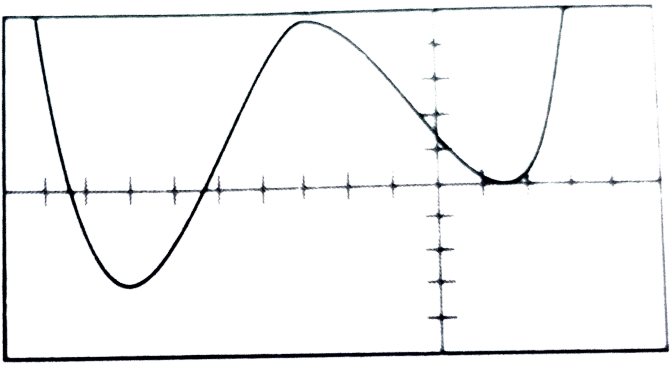

WINDOW
Xmin=−10
Xmax=5
Xscl=1
Ymin=−250
Ymax=250
Yscl=50
Xres=1
ΔX=.056818181818
TraceStep=.113636363636

19.

The graph of $y = x^4 + 11x^3 + 9x^2 - 97x + c$ is shown above with the window shown below iit. Which of the following values could be c?

A. -2.820

B. -80

C. 80

D. 250

Answer: C

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20. Which of the following is the solution set for $x(x-3)(x+2) > 0$?

A. $x < -2$

B. $-2 < x < 3$

C. $-2 < x < 3$ or $x > 3$

D. $-2 < x < 0$ or $x > 3$

Answer: D

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21. Which of the following is the equation of the circle that has its center at the origin and

is tangent to the line with equation $3x - 4y = 10$?

A. $x^2 + y^2 = 2$

B. $x^2 + y^2 = 3$

C. $x^2 + y^2 = 4$

D. $x^2 + y^2 = 5$

Answer: C

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22. If $f(x) = 3 - 2x + x^2$, then $\left(\frac{f(x+t) - f(x)}{t}\right) =$

A. $t^2 + 2xt - 2t$

B. $x^2t^2 - 2xt + 3$

C. $t + 2x - 2$

D. $2x - 2$

Answer: C

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23. If $f(x) = x^3$ and $g(x) = x^2 + 1$, which of the following is an odd functionn (are odd functions)?

I. $f(x) \cdot g(x)$

II. $f(g(x))$

III. $g(f(x))$

A. Only I

B. only II

C. only III

D. Only II and III

Answer: A

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24. In how many ways can a committee of four be selected from nine so as to always include a particular man?

A. 48

B. 56

C. 70

D. 126

Answer: B

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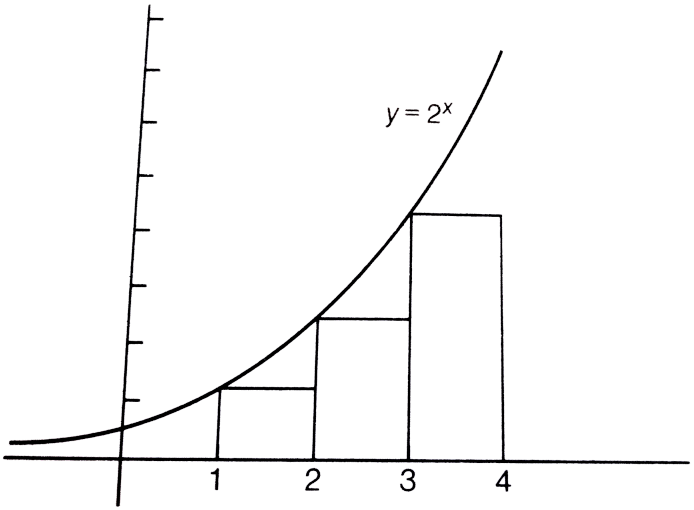

25.

The figure above shows a portion of the graph of $y = 2^x$. What is the sum of the areas of the three inscribed rectangles shown?

A. 14

B. 28

C. 128

D. 256

Answer: A

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26. If the mean of the set of data 1,2,3,1,2,5,x is $3.\overline{27}$, what is the value of x?

A. -10.7

B. 2.5

C. 5.6

D. 8.9

Answer: D

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27. In $\triangle JKL, \sin L = \frac{1}{3}, \sin J = \frac{3}{5}$, and $JK = \sqrt{5}$ inches, the length of KL, is inches, is

A. 1.7

B. 3.0

C. 3.5

D. 4.0

Answer: D

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28. Matrix X has r rows and c columns, and matrix Y has c rows and d columns, where r, c and d are different. Which of the follwing

statements must be true?

I. The product YX exists.

II. The product of XY exists and has r rows and d columns.

III. the product XY exists and has c rows and c columns.

A. I only

B. II only

C. III only

D. I and II

Answer: B

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29. Which of the following statements is logically equivalent to: "If he studies, he will pass the course."?

A. He passed the course, therefore, he studied.

B. He did not study, therefore, he will not pass the course.

C. He did not pass the course, therefore he did not study.

D. He will pass the course only if he studies.

Answer: C

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30. If $f(x) = x - 7$ and $g(x) = \sqrt{x}$, what is the domain of $g \circ f$?

A. $x \leq 0$

B. $x \geq -7$

C. $x \geq 0$

D. $x \geq 7$

Answer: D

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31. In $\triangle ABC, a = 1, b = 4,$ and $\angle C = 30^\circ$. The length of c is

A. 4.6

B. 3.6

C. 3.2

D. 2.9

Answer: C

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32. The solution set of $3x+4y < 0$ lies in which quadrants?

A. I only

B. I and II

C. I,II, and III

D. II,III, and IV

Answer: D

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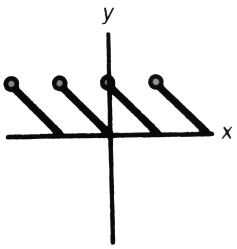
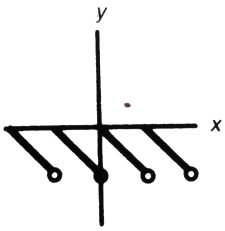
33. 

Which of the following could represent the inverse of the function graphed above?

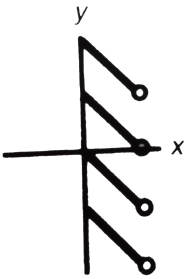
A.



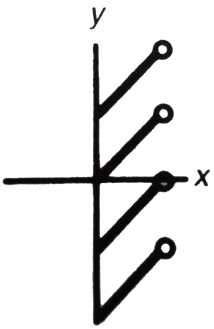
B.



C.



D.



Answer: D

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34. If f is a linear function and $f(-2) = 11, f(5) = -2,$ and $f(x) = 4.3,$ what is the value of x?

A. -3.1

B. -1.9

C. 1.6

D. 2.9

Answer: C

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35. A taxicab company wanted to determine the fuel cost of its fleet. A sample of 30 vehicles was selected, an the fuel cost for the last mooth was tabulated for each vehicle. Later it was discovered that the highest amount was mistakenly recorded with an extra zero, so it was 10 times to actual amount. when the correction was made, this was still

the highest amount. which of the following must have remained the same after the correction was made?

A. Mean

B. Median

C. Mode

D. Range

Answer: B

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36. The range of the function $y = x^{-2/3}$ is

A. $y < 0$

B. $y > 0$

C. $y \geq 0$

D. $y \leq 0$

Answer: B

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37. The formula $A = Pe^{0.04t}$ gives the amount A that a savings account will be worth if an initial investment P is compounded at an annual rate of 4 percent for t years. Under these conditions, how many years will it take an initial investment of $10,000 to be worth approximately $25,000?

A. 1.9

B. 2.5

C. 9.9

D. 22.9

Answer: D

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38. A coin is tossed three times. Given that at least one head appears, what is the probability that exactly two heads will appear?

A. $\frac{3}{8}$

B. $\frac{3}{7}$

C. $\frac{5}{8}$

D. $\frac{3}{4}$

Answer: B

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39. A unit vector parallel to vector $\vec{V} = (2, -3, 6)$ is vector

A. $(-2, 3, -6)$

B. $(6, -3, 2)$

C. $(-0.29, 0.43, -0.86)$

D. $(0.29, 0.43, -0.86)$

Answer: C

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40. What is the equation of the horizontal asymptote of the function $f(x) = \frac{(2x-1)(x+3)}{(x+3)^2}$?

A. $y = -9$

B. $y = -3$

C. $y = 0$

D. `y=2'

Answer: D

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41. The points in the rectangular coordinate plane are transformed in such a way that each point A(x,y) is moved to a point $A'(kx, ky)$. If the distance between a point A and the origin is d, then the distance between the origin and thhe point A' is

A. $\frac{k}{d}$

B. $\frac{d}{k}$

C. d

D. kd

Answer: D

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42. A committee of 5 people is to be selected from 6 men and 9 women. If the selection is made randomly, what is the probability that

the committee consists of 3 men and 2 woman?

A. $\frac{1}{9}$

B. $\frac{240}{1,001}$

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

D. $\frac{1,260}{3,003}$

Answer: B

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43. Three consecutive terms, in order, of an arithmetic sequence are $x + \sqrt{2}, 2x + \sqrt{3}, \text{ and } 5x - \sqrt{5}.$ Then x equals

A. 2.14

B. 2.45

C. 2.46

D. 3.24

Answer: A

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44. The graph of $xy - 4x - 2y - 4 = 0$ can be expressed as a set of parametic. If $y = \frac{4t}{t-3}$ and $x = f(t)$, then f(t)=

A. $t + 1$

B. $t - 1$

C. $3t - 3$

D. $\frac{t-3}{4t}$

Answer: B

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45. If $f(9x) = ax^2 + bx + c$, how must a and b be related so that the graph of $f(x - 3)$ will be symmetric about the y-axis?

A. a=b

B. b=0, a is any real number

C. b=3a

D. b=6a

Answer: D

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46. The graph of $y=\log_5 x$ and $y = \ln\ 0.5x$ intersect at a point where x equals

A. 6.24

B. 5.44

C. 1.69

D. 1.14

Answer: A

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47. What is the value of x if $\pi \leq x \leq \frac{3\pi}{2}$ and $\sin x = 5\cos x$?

A. 3.399

B. 6.625

C. 4.515

D. 4.623

Answer: C

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48. The area of thee region enclosed by the graph of the polar curve $r = \frac{1}{\sin\theta + \cos\theta}$ and the x- and y-axis is

A. 0.48

B. 0.5

C. 0.52

D. 0.98

Answer: B

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49. A rectangular box has dimensions of length=6, width=4, and height=5. the measure of the angle formed by a diagonal of the box with the base of the box is

A. 27°

B. 35°

C. 40°

D. 44°

Answer: B

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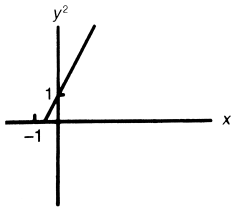
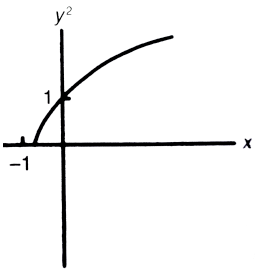
50. If (x,y) represents a point on the the graph of $y = 2x + 1$, which of the following could be a portion of the graph of the set of points (x, y^2)?

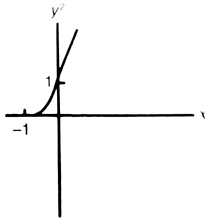
A.



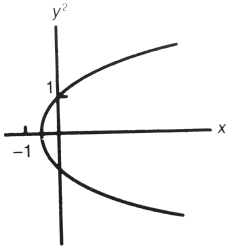
B.



C.



D.



Answer: C

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