MATHS

BOOKS - INDEPENDENTLY PUBLISHED MATHS (ENGLISH)

MODEL TEST 4

Mcq

1. If point (a,b) lies on the graph of function f, which of the following points must lie on the

graph of the inverse f?

A. (a,b)

B. (-a,b)

C. (a,-b)

D. (b,a)

Answer: D

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2. Harry had grades of 70,80,85 and 80 on his quizzers. If all quizzers have the same wight, what grade must he get on his next quiz so that his average will be 80?

A. 85

B. 90

C. 95

D. 100

Answer: A

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3. If L is a line through (-1,3) and (4,2), for what value of k is (3,k) on L?

A. -2

B. 0

C. 2.2

D. 2.5

Answer: C

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4. If $\log_b$ x=p and $\log_b$ y=q, then $\log_b$ xy=

A. pq

B. p+q

C. $\frac{p}{q}$

D. p-q

Answer: B

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5. The sum of the root of $3x^3 + 4x^2 = 4x = 0$ is

A. $-\frac{4}{3}$

B. $-\frac{3}{4}$

C. 0

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

Answer: A

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6. If f(x)$-\frac{1}{x}$, then f(a)+$f\left(\frac{1}{a}\right)=$

A. 0

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

C. $a-\frac{1}{a}$

D. $\frac{a^4-a^2+1}{a(a^2-1)}$

Answer: A

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7. If f(x)=log(x+1), what is $f^{-1}(3)$?

A. 0.6

B. 4

C. 999

D. 1001

Answer: C

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8. If f(x) ≥ 0 for all x, then f(2-x) is

A. ≥ -2

B. ≥ 0

C. ≥ 2

D. ≤ 0

Answer: B

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9. How many four-digit numbers can be formed from the numbers 0,2,4,8 if no digit is repeated?

A. 18

B. 24

C. 27

D. 36

Answer: A

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10. If x-1 is a factor of $x^2 + ax - 4$, then a has the value

A. 4

B. 3

C. 2

D. 1

Answer: B

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11. If 10 coins are to be flipped and the first 5 all come up heads, what is the probability that exactly 3 more heads will be flipped?

A. 0.0439

B. 0.1172

C. 0.125

D. 0.3125

Answer: D

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12. If $i = \sqrt{1}$ and n is a positive integer, which of the following statements is FALSE?

A. $i^{4n} = 1$

B. $i^{4n+1} = -i$

C. $i^{4n+2} = -1$

D. $i^{n+4} = i^n$

Answer: B

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13. If $\log_r 3$=7.1, then $\log_r \sqrt{3}$=

A. 2.66

B. 3.55

C. $\frac{\sqrt{3}}{r}$

D. $\frac{7.1}{r}$

Answer: B

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14. If f(x) $= 4x^2$ and g(x) =f(sin x)+f(cos x), then $g(23^\circ)$ is

A. 1

B. 4

C. 4.29

D. 5.37

Answer: B

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15. What is the sum of the roots of the equation $\left(x-\sqrt{2}\right)\left(x^2-\sqrt{3}x+\pi\right)=0$?

A. -0.315

B. -0.318

C. 1.414

D. 3.15

Answer: D

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16. Which of the following equations has (have) graphes consisting of two perpendicular lines?

I. xy=0

II. $|y|=|x|$

III. $|xy|=1$

A. only I

B. only II

C. only III

D. only I and II

Answer: D

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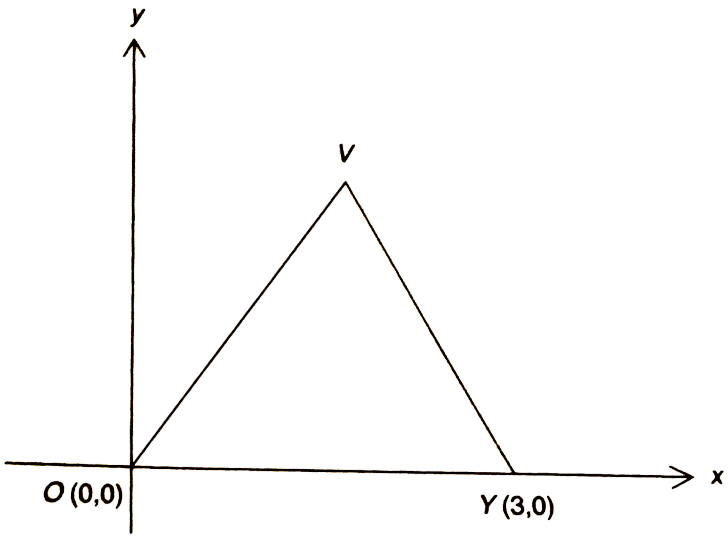
17. If f(x) $= (4 - x)^2$ and g(x) $= \sqrt{x}$, then (g o f) (x)=



A. $|4 - x|$

B. $|2 - x|$

C. $\sqrt{x(4 - x)^2}$

D. $\left(\sqrt{4-x}\right)^2$

Answer: A

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18. In the figure above, if VO=VY, what is the slope of segment VO?

A. $-\sqrt{3}$

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

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

D. cannot be determined from the given information

Answer: D

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19. A cylindrica bar of metal has a base radius of 2 and a height of 9. It is melted down and reformed into a cube. A side of the cube is

A. 2.32

B. 3.84

C. 4.84

D. 97.21

Answer: C

20. The graph of $y=(x+2)(2x-3)$ can be expressed as a set of parametric equations. If $x=2t-2$ and $y=f(t)$, then $f(t)=$

A. 2t(4t-5)

B. (2t-2)(4t-7)

C. 2t(4t-7)

D. (2t-2)(4t-5)

Answer: C

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21. The inverse of $y = \frac{2x+1}{3-x}$ is

A. $y = \frac{-2x-1}{x-3}$

B. $y = \dfrac{3 - x}{2x + 1}$

C. $y = \dfrac{3x + 1}{x - 2}$

D. $y = \dfrac{3x - 1}{x + 2}$

Answer: D

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22. Rent-a-Rek has 27 cars available for rental. Twenty of these are compact, and 7 are midsize. If two cars are selected at random, what is the probability that both are compact?

A. 0.576

B. 0.0598

C. 0.481

D. 0.541

Answer: D

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23. If a and b are real numbers, with $a > b$ and $|a| < |b|$, then

A. $a > 0$

B. $a < 0$

C. $b > 0$

D. $b < 0$

Answer: D

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24. If [x] is defined to represent the greatest integer less than or equal to x , and f(x)

$= \left| x - [x] - \frac{1}{2} \right|$, the maximum value of f(x) is

A. -1

B. 0

C. $\frac{1}{2}$

D. 1

Answer: C

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25. As x gets closer to 2, $\frac{x^3 - 8}{x^2 - 4}$ approaches

A. 0

B. 1

C. 2

D. 3

Answer: D

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26. A right circular cone whose base radius is 4 is inscribed in a sphere of radius 5. what is the ratio of the volume of the cone to the volume of the sphere?

A. 0.222:1

B. 0.256:1

C. 0.288:1

D. 0.333:1

Answer: B

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27. If $x_0 = 1$ and $x_{n+1} = 3\sqrt{2x_n}$, $then$x_3` =

A. 1.26

B. 1.361

C. 1.396

D. 1.408

Answer: C

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28. The y- intercept of y=$\left|\sqrt{2}\csc\left(x+\frac{\pi}{5}\right)\right|$ is

A. 0.22

B. 0.67

C. 1.41

D. 2.4

Answer: D

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29. If the center of the circle $x^2 + y^2 + ax + by + 2 = 0$ point (4,-8), then a+b=

A. -8

B. -4

C. 4

D. 8

Answer: D

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30. If $p(x) = 3x^2 + 9x + 7$ and p(a)=2 , then a=

A. only 0.736

B. only-2.264

C. 0.736 or 2.264

D. -0.736 or -2.264

Answer: D

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31. If 2 is a root of the equation $x^4 + 2x^3 - 3x^2 + kx - 4 = 0$, then k=

A. -12

B. -10

C. -8

D. 4

Answer: C

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32. If $\sin A = \frac{3}{5}, 90^\circ \leq A < +180^\circ, \cos B = \frac{1}{3}$, and $270^\circ \leq B \leq 360^\circ$, $\sin(A+B) =$

A. -0.832

B. -0.554

C. -0.333

D. 0.954

Answer: D

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33. A family has three children.Assuming that the probability of having a boy is 0.5, what is the probability that at least one child is a boy?

A. 0.875

B. 0.67

C. 0.5

D. 0.375

Answer: A

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34. If sec 1.4=x, find the value of $\csc\left(2\tan^{-1}x\right)$

.

A. 0.33

B. 0.87

C. 1

D. 3.03

Answer: D

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35. The graph of $|y-1|=|x+1|$ forms an X. The two branches of the X intersect at a point whose coordinates are

A. (1,1)

B. (-1,1)

C. (1,-1)

D. (-1,-1)

Answer: B

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36. For what value of x between 0° and 360° does cos 2x=2cos x?

A. 68.5° or 291.5°

B. only 68.5°

C. 103.9° or 256.1°

D. 111.5° or 270°

Answer: D

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37. An data set has a mean of 12 and a standard deviation of 2. If 5 is added to twice each data value, the new data set has

A. a mean of 24 and a standard deviation of 10

B. a mean of 24 and a standard deviation of 15

C. a mean of 29 and a standard deviation of 15

D. a mean of 29 and a standard deviation of 4

Answer: D

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38. For each positive integer n, let S_n=sum of all positive integers less than or equal on n. Then S_{51} equals

A. 50

B. 51

C. 1250

D. 1326

Answer: D

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39. If the graph of $3x^2 + 4y^2 - 6x + 8y - 5 = 0$ and $(x-2)^2 = 4(y+2)$ are drawn on the same

coordinate system, at how many points do they intersect?

A. 0

B. 1

C. 2

D. 3

Answer: C

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40. If $\log_x 2 = \log_3 x$ is satisfied by two values of x, what is their sum?

A. 0

B. 1.73

C. 2.35

D. 2.81

Answer: D

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41. which of the following lines are asymptotes for the graph of $y = \dfrac{3x^2 - 13x - 10}{x^2 - 4x - 5}$?

I. x=-1

II. x=5

III. Y=3

A. I only

B. II only

C. I and II

D. I and III

Answer: D

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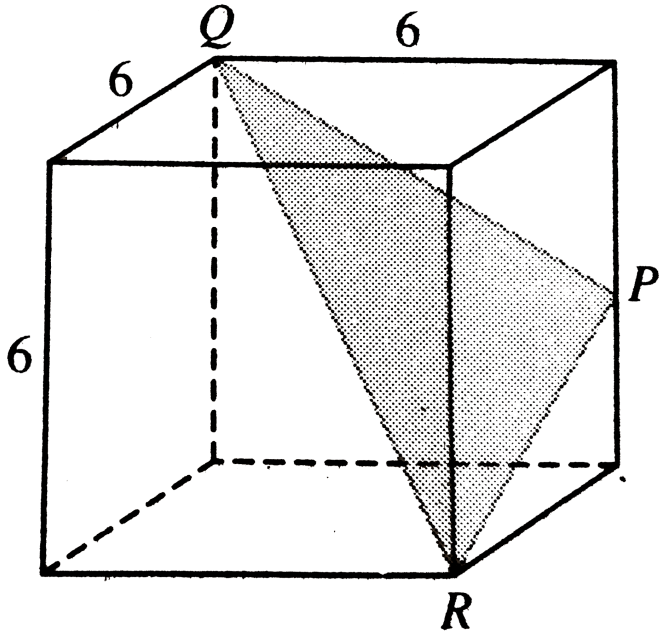
42. If $\frac{3\sin 2\theta}{1-\cos 2\theta} = \frac{1}{2}$ and $0^\circ \leq \theta 180^\circ$, then $\theta =$



A. 0°

B. $0^\circ \quad \text{or} \quad 180^\circ$

C. 80.5°

D. $0^\circ \quad \text{or} \quad 80.5^\circ$

Answer: C

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43. The cube in the figure above has edges of length 6 If point p is the midpoint of an edge, what is the perimeter of $\triangle QPR$?

A. 13.41

B. 14.28

C. 17.1

D. 23.81

Answer: D

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44. Two positive numbers, a and b, are in the sequence 4. a,b,12. The first three numbers form a geometric sequence, and the last three

numbers form an arithmetic sequence. The difference b-a equals

A. 1

B. $\frac{11}{2}$

C. 2

D. 3

Answer: D

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45. A sector of a circle has an arc length of 2.4 feet and an area of 14.3 square feet. How many degrees are in the central angle?

A. 63.4°

B. 20.2°

C. 14.3°

D. 11.5°

Answer: D

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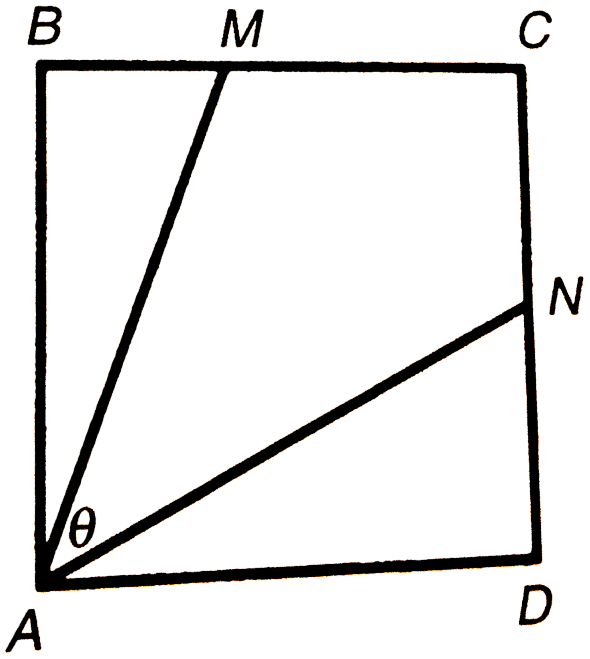
46. The y-coordinate of one focus of the ellipse $36x^2 + 25y^2 + 144 - 50y - 731 = 0$ is



A. -2

B. 1

C. 3.32

D. 4.32

Answer: D

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47. in the figure above, ABCD is a square. M is the point one-third of the way from B to C. N is the point one-half of the way from D to C. Then θ=

A. 50.8°

B. 45.0°

C. 36.9°

D. 36.1°

Answer: B

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48. If f is a linear function such that f(7)=5,f(12)=-6, and f(x)=23.7, what is the value of x?

A. -3.2

B. -1.5

C. 1

D. 2.4

Answer: B

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49. Under which of the following conditions is $\frac{x(x-y)}{y}$ negative?

A. xltylt0

B. yltxlt0

C. 0ltxlt0

D. xlt0lty

Answer: A

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50. The binary operation * is defined over the set of real number to be a*b

$$= \begin{cases} a \sin. \frac{b}{a} & \text{if } a > b \\ b \cos. \frac{a}{b} & \text{if } a < b \end{cases}$$

Find the value of $5 * 3$

A. 1.84

B. 2.82

C. 2.79

D. 3.65

Answer: B

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