Calculus limits multiple choice questions

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MCQ: Coth(x) = ex + e-x/2 ex - e-x/2 ex - e-x/ex + e-x ex + e-x/ex - e-x MCQ: If y is expressed in terms of a variable x as Y = ƒ(x), then y is called explicit function implicit function linear function identity function MCQ: Tanh-1x = ln(x+√(x² +1) ln(x+√(x² +1) 1/2ln(1+x/1-x) 1/2ln(x+1/x-1) MCQ: Cosh-1x = ln(x+√(x² +1)) ln(x+√(x² +1)) 1/2ln(1+x/1-x) 1/2ln(x+1/x-1) MCQ: If ƒ(x) = xsecx, then ƒ(0) = Home » Mathematics » Questions and Answers in Mathematics » Differential Calculus 01 » Prev Article Next Article (Last Updated On: January 6, 2021) This is the Multiple Choice Questions Part 1 of the Series in Differential Calculus (Limits and Derivatives) topic in Engineering Mathematics. In Preparation for the ECE Board Exam make sure to expose yourself and familiarize in each and every questions compiled here taken from various sources including but not limited to past Board Examination Questions in Engineering Mathematics, Mathematics Books, Journals and other Mathematics References. MCQ Topic Outline included in Mathematics Board Exam Syllabi MCQ in Derivatives | MCQ in Derivatives of Algebraic functions | MCQ in Derivatives of Exponential functions | MCQ in Derivatives of Logarithmic functions | MCQ in Derivatives of Trigonometric functions | MCQ in Derivatives of Inverse Trigonometric functions | MCQ in Derivatives of Hyperbolic functions Start Practice Exam Test Questions Part 1 of the Series Choose the letter of the best answer in each questions. Problem 1: CE Board November 1997 Evaluate the Limit: A. 1/5 B. 2/5 C. 3/5 D. 4/5 Answer: Option B Solution: Review Solution for Number 1 Problem 2: ECE Board April 1998 Evaluate the Limit: A. undefined B. 0 C. Infinity D. 1/7 Problem 3: ME Board April 1998 Evaluate the Limit: A. 0 B. 1 C. 8 D. 16 Problem 4: ECE Board April 1993 Evaluate the Limit: A. 0 B. 2 C. 4 D. 6 Problem 5: EE Board April 1995 Evaluate the Limit: A. 0 B. 1/2 C. 2 D. -1/2 Problem 6: ME Board October 1997 Compute the following limit: A. 1 B. 0 C. 2 D. Infinite Problem 7: EE Board October 1994 Evaluate the Limit: A. Undefined B. 3/5 C. Infinity D. Zero Problem 8: ECE Board November 1991 Evaluate the Limit: A. 24 B. 26 C. 28 D. 30 Problem 9: ECE Board November 1994 Evaluate the Limit: A. e2π B. e2/π C. 0 D. α Problem 10: EE Board October 1997 Differentiate y = ex cos x2 A. –ex sin x2 B. ex (cos x2 – 2x sin x2) C. ex cos x2 – 2x sin x2 D. -2xex sin x Problem 11: EE Board October 1997 Differentiate y = sec (x2 + 2) A. 2x cos (x2 + 2) B. –cos (x2 + 2) cot (x2 + 2) C. 2x sec (x2 + 2) tan (x2 + 2) D. cos (x2 +2) Problem 12: CE Board October 1994 What is the derivative with respect to x of (x + 1)3 – x3? A. 3x + 6 B. 3x – 3 C. 6x – 3 D. 6x + 3 Problem 13: EE Board October 1997 Differentiate y = log10 (x2 + 1)2 A. 4x (x2 + 1) B. (4x log10 e) / (x2 + 1) C. log e(x) (x2 + 1) D. 2x (x2 + 1) Problem 14: EE Board October 1997 Differentiate (x2 + 2)1/2 A. ((x2 + 2)1/2) / 2 B. x / (x2 + 2)1/2 C. (2x) / (x2 + 2)1/2 D. (x2 + 2)3/2 Problem 15: EE Board October 1997 If y = (t2 + 2)2 and t = x1/2, determine dy/dx A. 3/2 B. (2x2 + 2x) / 3 C. 2(x + 2) D. x5/2 + x1/2 Problem 16: ME Board April 1997 What is the first derivative of the expression (xy)x = e? A. 0 B. x/y C. –y [(1 + ln xy) / x)] D. –y [(1 – ln xy) / x2)] Problem 17: ME Board April 1998 Find the derivative with respect to x function √(2 – 3x2) A. (-2x2) / √(2 – 3x2) B. (-3x) / √(2 – 3x2) C. (-3x2) / √(2 – 3x2) D. (3x) / √(2 – 3x2) Problem 18: EE Board April 1995 Find y' if y = arc sin cos x A. -1 B. -2 C. 1 D. 2 Problem 19: CE Board May 1997 Find the derivative of arc cos 4x. A. -4 / (1 – 16x2)0.5 B. 4 / (1 – 16x2)0.5 C. -4 / (1 – 4x2)0.5 D. 4 / (1 – 4x2)0.5 Problem 20: CE Board November 1996 Find the derivative of (x + 1)3 / x A. ((x + 1)2 / x) – ((x + 1)3 / x) B. (4(x + 1)2 / x) – (2(x + 1)3 / x) C. (2(x + 1)3 / x) – ((x + 1)3 / x3) D. (3(x + 1)2 / x) – ((x + 1)3 / x2) Problem 21: ECE Board November 1991 Differentiate the equation y = x2 / (x + 1) A. (x2 + 2x) / (x + 1)2 B. x / (x + 1) C. 2x D. (2x2) / (x + 1) Problem 22: CE Board November 1995 The derivative with respect to x of 2cos2 (x2 + 2) is A. 2sin (x2 + 2) cos (x2 + 2) B. -2sin (x2 + 2) cos (x2 + 2) C. 8x sin (x2 + 2) cos (x2 + 2) D. -8x sin (x2 + 2) cos (x2 + 2) Problem 23: CE Board November 1993 Find the second derivative of y by implicit differentiation from the equation 4x2 + 8y2 = 36 A. 64x2 B. (– 9/4) y3 C. 32xy D. (- 16/9) y3 Problem 24: ME Board April 1998 Find the partial derivative with respect to x of the function xy2 – 5y + 6. A. y2 – 5 B. y2 C. xy – 5y D. 2xy Problem 25: ME Board October 1997 Find the second derivative of x3 – 5x2 + x = 0 A. 10x – 5 B. 6x – 10 C. 3x + 10 D. 3x2 – 5x Problem 26: ME Board April 1998 Given the function f(x) = x to the 3rd power – 6x + 2. Find the first derivative at x = 2. A. 6 B. 7 C. 3x2 – 5 D. 8 Problem 27: CE Board May 1996 Find the slope of the ellipse x2 + 4y2 – 10x – 16y + 5 = 0 at the point where y = 2 + 80.5 and x = 7. A. -0.1463 B. -0.1538 C. -0.1654 D. -0.1768 Problem 28: EE Board October 1997 If y = 4cos x + sin 2x, what is the slope of the curve when x = 2 radians? A. -2.21 B. -4.94 C. -3.95 D. 2.21 Problem 29: ECE Board November 1991 Find the slope of the line tangent to the curve y = x3 – 2x + 1 at x = 1. A. 1 B. 1/2 C. 1/3 D. 1/4 Problem 30: ECE Board November 1991 Given the slope of the curve at the point (1, 1): y = (x3/4) – 2x + 1 A. 1/4 B. -1/4 C. 1 1/4 D. -1 1/4 Problem 31: ECE Board November 1998 Find the slope of x2y = 8 at the point (2, 2) A. 2 B. -1 C. -1/2 D. -2 Problem 32: CE Board May 1998 Find the slope of the curve x2 + y2 – 6x + 10y + 5 + 0 at point (1, 0). A. 1/5 B. 2/5 C. 1/4 D. 2 Problem 33: CE Board May 1996 Find the slope of the tangent to the curve, y = 2x – x2 + x3 at (0, 2). A. 1 B. 2 C. 3 D. 4 Problem 34: ECE Board April 1999 Find the coordinates of the vertex of the parabola y = x2 – 4x + 1 by making use of the fact that at the vertex, the slope of the tangent is zero. A. (2, -3) B. (3, -2) C. (-1, -3) D. (-2, -3) Problem 35: ECE Board April 1999 Find the equation of the normal to x2 + y2 = 5 at the point (2, 1) A. y = 2x B. x = 2y C. 2x + 3y = 3 D. x + y = 1 Problem 36: CE Board May 1995 What is the equation of the normal to the curve x2 + y2 = 25 at (4, 3)? A. 5x + 3y = 0 B. 3x – 4y = 0 C. 3x + 4y = 0 D. 5x – 3y = 0 Problem 37: EE Board April 1997 Locate the points of inflection of the curve y = f(x) = x2 ex. A. -2 ± √3 B. 2 ± √2 C. -2 ± √2 D. 2 ± √3 Problem 38: ECE Board November 1991 In the curve 2 + 12x – x3, find the critical points. A. (2, 18) and (-2, -14) B. (2, 18) and (2, -14) C. (-2, 18) and (2, -14) D. (-2, 18) and (-2, 14) Problem 39: CE Board November 1997 Find the radius of curvature of a parabola y2 – 4x = 0 at point (4, 4). A. 22.36 units B. 25.78 units C. 20.33 units D. 15.42 units Problem 40: ECE Board November 1996 Find the radius of curvature at any point in the curve y + ln cos x = 0. A. cos x B. 1.5707 C. sec x D. 1 Online Question and Answer in Differential Calculus (Limits and Derivatives) Series Following is the list of multiple choice questions in this brand new series: MCQ in Differential Calculus (Limits and Derivatives) PART 1: MCQ from Number 1 – 50 Answer key: PART 1 PART 2: MCQ from Number 51 – 100 Answer key: PART 2 Online Question and Answer in Differential Calculus (Maxima/Minima and Time Rates) Series Following is the list of multiple choice questions in this brand new series: MCQ in Differential Calculus (Maxima/Minima and Time Rates) PART 1: MCQ from Number 1 – 50 Answer key: PART 1 PART 1: MCQ from Number 2 – 100 Answer key: PART 2 Page 2 (Last Updated On: January 6, 2021) Below are the answers key for the Multiple Choice Questions in Differential Calculus (Limits and Derivatives) Part 1. 1. B. 2/5 Review: Solution for Number 1 2. D. 1/7 Review: Solution for Number 2 3. C. 8 Review: Solution for Number 3 4. C. 4 Review: Solution for Number 4 5. B. 1/2 Review: Solution for Number 5 6. A. 1 Review: Solution for Number 6 7. C. Infinity Review: Solution for Number 7 8. A. 24 Review: Solution for Number 8 9. B. e2/π Review: Solution for Number 9 10. B. ex (cos x2 – 2x sin x2) Review: Solution for Number 10 11. C. 2x sec (x2 + 2) tan (x2 + 2) Review: Solution for Number 11 12. D. 6x + 3 Review: Solution for Number 12 13. B. (4x log10 e) / (x2 + 1) Review: Solution for Number 13 14. B. x / (x2 + 2)1/2 Review: Solution for Number 14 15. C. 2(x + 2) Review: Solution for Number 15 16. C. –y [(1 + ln xy) / x)] Review: Solution for Number 16 17. B. (-3x) / √(2 – 3×2) Review: Solution for Number 17 18. A. –1 Review: Solution for Number 18 19. A. -4 / (1 – 16x2)0.5 Review: Solution for Number 19 20. D. (3(x + 1)2 / x) – ((x + 1)3 / x2) Review: Solution for Number 20 21. A. (x2 + 2x) / (x + 1)2 Review: Solution for Number 21 22. C. 8x sin (x2 + 2) cos (x2 + 2) Review: Solution for Number 22 23. B. (– 9/4) y3 Review: Solution for Number 23 24. B. y2 Review: Solution for Number 24 25. B. 6x – 10 Review: Solution for Number 25 26. A. 6 Review: Solution for Number 26 27. D. -0.1768 Review: Solution for Number 27 28. B. -4.94 Review: Solution for Number 28 29. A. 1 Review: Solution for Number 29 30. D. -1 1/4 Review: Solution for Number 30 31. D. –2 Review: Solution for Number 31 32. B. 2/5 Review: Solution for Number 32 33. B. 2 Review: Solution for Number 33 34. A. (2, -3) Review: Solution for Number 34 35. B. x = 2y Review: Solution for Number 35 36. B. 3x – 4y = 0 Review: Solution for Number 36 37. C. -2 ± √2 Review: Solution for Number 37 38. A. (2, 18) and (-2, -14) Review: Solution for Number 38 39. A. 22.36 units Review: Solution for Number 39 40. C. sec x Review: Solution for Number 40 Online Question and Answer in Differential Calculus (Limits and Derivatives) Series Following is the list of multiple choice questions in this brand new series: MCQ in Differential Calculus (Limits and Derivatives) PART 1: MCQ from Number 1 – 50 Answer key: PART 1 PART 2: MCQ from Number 51 – 100 Answer key: PART 2 Online Question and Answer in Differential Calculus (Maxima/Minima and Time Rates) Series Following is the list of multiple choice questions in this brand new series: MCQ in Differential Calculus (Maxima/Minima and Time Rates) PART 1: MCQ from Number 1 – 50 Answer key: PART 1 PART 1: MCQ from Number 2 – 100 Answer key: PART 2 Page 3 Home » Mathematics » Questions and Answers in Mathematics » Differential Calculus 02 » Prev Article Next Article (Last Updated On: January 6, 2021) This is the Multiple Choice Questions Part 1 of the Series in Differential Calculus (Maxima/Minima and Time Rates) topic in Engineering Mathematics. In Preparation for the ECE Board Exam make sure to expose yourself and familiarize in each and every questions compiled here taken from various sources including but not limited to past Board Examination Questions in Engineering Mathematics, Mathematics Books, Journals and other Mathematics References. MCQ Topic Outline included in Mathematics Board Exam Syllabi MCQ in Maxima | MCQ in Minima | MCQ in Time Rates | MCQ in Relation between the variables | MCQ in Maxima/Minima values Start Practice Exam Test Questions Part 1 of the Series Choose the letter of the best answer in each questions. Problem 1: ECE Board April 1999 Find the minimum distance from the point (4, 2) to the parabola y2 = 8x. A. 4√3 B. 2√2 C. √3 D. 2√3 Answer: Option B Solution: Review Solution for Number 1 Problem 2: EE Board April 1990 The sum of two positive numbers is 50. What are the numbers if their product is to be the largest possible. A. 24 and 26 B. 28 and 22 C. 25 and 25 D. 20 and 30 Problem 3: EE Board March 1998 A triangle has variable sides x, y, z subject to the constraint such that the perimeter is fixed to 18 cm. What is the maximum possible area for the triangle? A. 15.59 cm2 B. 18.71 cm2 C. 17.15 cm2 D. 14.03 cm2 Problem 4: EE Board October 1997 A farmer has enough money to build only 100 meters of fence. What are the dimensions of the field he can enclose the maximum area? A. 25 m x 25 m B. 15 m x 35 m C. 20 m x 30 m D. 22.5 m x 27.5 m Problem 5: CE Board May 1997 Find the minimum amount of tin sheet that can be made into a closed cylinder having a volume of 108 cu. inches in square inches. A. 125.50 B. 127.50 C. 129.50 D. 123.50 Problem 6: ME Board April 1998 A box is to be constructed from a piece of zinc 20 sq. in by cutting equal squares from each corner and turning up the zinc to form the side. What is the volume of the largest box that can be constructed? A. 599.95 cu in. B. 592.59 cu in. C. 579.50 cu in. D. 622.49 cu in. Problem 7: EE Board April 1997 A poster is to contain 300 (cm square) of printed matter with margins of 10 cm at the top and bottom and 5 cm at each side. Find the overall dimensions if the total area of the poster is minimum. A. 27.76 cm, 47.8 cm B. 20.45 cm, 35.6 cm C. 22.24 cm, 44.5 cm D. 25.55 cm, 46.7 cm Problem 8: CE Board November 1996 A normal window is in the shape of a rectangle surmounted by a semi-circle. What is the ratio of the width of the rectangle to the total height so that it will yield a window admitting the most light for a given perimeter? A. 1 B. 1/2 C. 2 D. 2/3 Problem 9: CE Board November 1996 Determine the diameter of a closed cylindrical tank having a volume of 11.3 cu m. to obtain minimum surface area. A. 1.22 B. 1.64 C. 2.44 D. 2.68 Problem 10: EE Board April 1997 The cost fuel in running a locomotive is proportional to the square of the speed and is $25 per hour for a speed of 25 miles per hour. Other costs amount to $100 per hour, regardless of the speed. What is the speed which will make the cost per mile a minimum? A. 40 mph B. 55 mph C. 50 mph D. 45 mph Problem 11: ME Board April 1996 The cost of C of a product is a function of the quantity x of the product: C(x) = x2 – 400x + 50. Find the quantity for which the cost is minimum. A. 1000 B. 1500 C. 2000 D. 3000 Problem 12: An open top rectangular tank with square bases is to have a volume of 10 cu. m. The materials for its bottom is to cost P15 per square meter and that for the sides, P6 per square meter. Find the most economical dimensions for the tank. A. 1.5 m x 1.5 m x 4.4 m B. 2 m x 2 m x 2.5 m C. 4 m x 4 m x 0.6 m D. 3 m x 3 m x 1.1 m Problem 13: ME Board October 1996 What is the maximum profit when the profit-versus-production function is as given below? P is profit and x is unit of production. A. 285,000 B. 200,000 C. 250,000 D. 305,000 Problem 14: EE Board October 1993 A boatman is at A which is 4.5 km from the nearest point B on a straight shore BM. He wishes to reach in minimum time at point C situated on the shore 9 km from B. How far from C should he land if he can row at the rate of 6 kph and can walk at the rate of 7.5 kph. A. 4.15 km B. 3.0 km C. 3.25 km D. 4.0 km Problem 15: EE Board March 1998 A fencing is limited to 20 ft. length. What is the maximum rectangular area that can be fenced in using two perpendicular corner sides of an existing wall? A. 120 ft2 B. 100 ft2 C. 140 ft2 D. 190 ft2 Problem 16: EE Board October 1992 The cost per hour of running a motor boat is proportional to the cube of the speed. At what speed will the boat run against a current of 8 km/hr in order to go a given distance most economically? A. 10 kph B. 13 kph C. 11 kph D. 12 kph Problem 17: ECE Board November 1998 Given a cone of diameter x and altitude of h. What percent is the volume of the largest cylinder which can inscribed in the cone to the volume of the cone? A. 44% B. 46% C. 56% D. 65% Problem 18: EE Board October 1993 At any distance x from the source of light, the intensity of illumination varies directly as the intensity of the source and inversely as the square of x. Suppose that there is a light at A, and another at B, the one at B having an intensity 8 times that of A. The distance AB is 4 m. At what point from A on the line AB will the intensity of illumination be least? A. 2.15 m B. 1.33 m C. 1.50 m D. 1.92 m Problem 19: CE Board May 1995 A wall "h" meters high is 2 m away from the building. The shortest ladder that can reach the building with one end resting on the ground outside the wall is 6 m. How high is the wall in meters? A. 2.34 B. 2.24 C. 2.44 D. 2.14 Problem 20: EE Board April 1997 The coordinates (x, y) in feet of a moving particle P are given by x = cost – 1 and y = 2sint – 1, where t is the time in seconds. At what extreme rates in fps is P moving along the curve? A. 3 and 2 B. 3 and 1 C. 2 and 0.5 D. 2 and 1 Problem 21: ECE Board April 1998 A statue 3 m high is standing on a base of 4 m high. If an observer's eye is 1.5 m above the ground, how far should he stand from the base in order that the angle subtended by the statue is a maximum? A. 3.41 m B. 3.51 m C. 3.71 m D. 4.41 m Problem 22: A man walks across a bridge at the rate of 5 fps as a boat directly beneath him at 10 fps. If the bridge is 10 feet above the boat, how fast are the man and the boat separating 1 second later? A. 8 fps B. 8.25 fps C. 8.33 fps D. 8.67 fps Problem 23: An LRT train 6 m above the ground crosses a street at 9 m/s at the instant that a car approaching at a speed of 4 m/s is 12 m up the street. Find the rate of the LRT train and the car separating one second later. A. 3.64 m/s B. 3.94 m/s C. 4.24 m/s D. 4.46 m/s Problem 24: EE Board October 1993 Water is flowing into a conical cistern at the rate of 8 m3/min. If the height of the inverted cone is 12 m and the radius of its circular opening is 6 m. How fast is the water level rising when the water is 4 m deep? A. 0.64 m/min B. 0.56 m/min C. 0.75 m/min D. 0.45 m/min Problem 25: CE Board November 1998 Water is pouring into conical vessel 15 cm deep and having a radius of 3.75 cm across the top. If the rate at which the water rises is 2 cm/sec, how fast is the water flowing into the conical vessel when the water is 4 cm deep? A. 2.37 m3/sec B. 5.73 m3/sec C. 6.28 m3/sec D. 4.57 m3/sec Problem 26: ME Board October 1996 Water is pouring into a swimming pool. After t hours, there are t + √t gallons in the pool. At what rate is the water pouring into the pool when t = 9 hours? A. 7/6 gph B. 8/7 gph C. 6/5 gph D. 5/4 gph Problem 27: A helicopter is rising vertically from the ground at a constant rate of 4.5 meters per second. When it is 75 m off the ground, a jeep passed beneath the helicopter traveling in a straight line at a constant rate of 80 kph. Determine how fast the distance between them changing after 1 second. A. 12.34 m/sec B. 11.10 m/sec C. 10.32 m/sec D. 9.85 m/sec Problem 28: ECE Board November 1991 A balloon is released from the ground 100 meters from an observer. The balloon rises directly upward at the rate of 4 meters per second. How fast is the balloon receding from the observer 10 seconds later? A. 1.68 m/sec B. 1.36 m/sec C. 1.55 m/sec D. 1.49 m/sec Problem 29: ECE Board April 1998 A balloon is rising vertically over a point A on the ground at the rate of 15 ft./sec. A point B on the ground level with and 30 ft. from A. When the balloon is 40 ft. from A, at what rate is its distance from B changing? A. 13 ft/sec B. 15 ft/sec C. 12 ft/sec D. 10 ft/sec Problem 30: CE Board May 1997 Car A moves due East at 30 kph at the same instant car B is moving S 30° E , with a speed of 60 kph. The distance from A to B is 30 km. Find how fast is the distance between them separating after one hour. A. 36 kph B. 38 kph C. 40 kph D. 45 kph Problem 31: CE Board November 1996 A car starting at 12:00 noon travels West at a speed of 30 kph. Another car starting from the same point at 2:00 PM travels North at 45 kph. Find how (in kph) fast the two are separating at 4:00 PM? A. 49 kph B. 51 kph C. 53 kph D. 55 kph Problem 32: CE Board May 1996 Two railroad tracks are perpendicular to each other. At 12:00 PM there is a train at each track approaching the crossing at 50 kph, one being 100 km and the other 150 km away from the crossing. How fast in kph is the distance between the two trains changing at 4:00 PM? A. 67.08 kph B. 68.08 kph C. 69.08 kph D. 70.08 kph Problem 33: CE Board May 1995 Water is running into a hemispherical bowl having a radius of 10 cm at a constant rate of 3 cm3/min. When the water x cm. deep, the water levels is rising at the rate of 0.0149 cm/min. What is the value of x? A. 3 B. 2 C. 4 D. 5 Problem 34: ECE Board November 1998 What is the allowable error in measuring the edge of the cube that is intended to hold 8 cu. m., if the error of the computed volume is not to exceed 0.03 cu. m? A. 0.002 m B. 0.003 m C. 0.0025 m D. 0.001 m Problem 35: EE Board October 1993 A standard cell has an emf "E" of 1.2 volts. If the resistance "R" of the circuit is increasing at the rate of 0.03 ohm/sec, at what rate is the current "I" changing at the instant when the resistance is 6 ohms? Assume Ohm's law E = IR. A. -0.002 amp/sec B. 0.004 amp/sec C. -0.001 amp/sec D. 0.003 amp/sec 36. A function is given below, what x value maximizes y? y2 + y + x2 – 2x = 5 A. 2.23 B. -1 C. 5 D. 1 37. The number of newspaper copies distributed is given by C = 50t2 – 200t + 10000, where t is in years. Find the minimum number of copies distributed from 1995 to 2002. A. 9850 B. 9800 C. 10200 D. 7500 38. Given the following profit-versus-production function for a certain commodity: P = 200000 – x – [1.1 / (1 + x)]8 Where P is the profit and x is unit of production. Determine the maximum profit. A. 190000 B. 200000 C. 250000 D. 550000 39. The cost C of a product is a function of the quantity x of the product is given by the relation: C(x) = x2 – 4000x + 50. Find the quantity for which the cost is a minimum. A. 3000 B. 2000 C. 1000 D. 1500 40. If y = x to the 3rd power – 3x. find the maximum value of y. A. 0 B. -1 C. 1 D. 2 41. Divide 120 into two parts so that product of one and the square of the other is maximum. Find the numbers. A. 60 & 60 B. 100 & 20 C. 70 & 50 D. 80 & 40 42. If the sum of two numbers is C, find the minimum value of the sum of their squares. A. C2 / 2 B. C2 / 4 C. C2 / 6 D. C2 / 8 43. A certain travel agency offered a tour that will cost each person P 1500.00 if not more than 150 persons will join, however the cost per person will be reduced by P 5.00 per person in excess of 150. How many persons will make the profit a maximum? A. 75 B. 150 C. 225 D. 250 44. Two cities A and B are 8 km and 12 km, respectively, north of a river which runs due east. City B being 15 km east of A. a pumping station is to be constructed (along the river) to supply water for the two cities. Where should the station be located so that the amount of pipe is a minimum? A. 3 km east of A B. 4 km east of A C. 9 km east of A D. 6 km east of A 45. A boatman is at A, which is 4.5 km from the nearest point B on a straight shore BM. He wishes to reach, in minimum time, a point C situated on the shore 9 km from B. How far from C should he land if he can row at the rate of 6 Kph and walk at the rate of 7.5 Kph? A. 1 km B. 3 km C. 5 km D. 8 km 46. The shortest distance from the point (5, 10) to the curve x2 = 12y is: A. 4.331 B. 3.474 C. 5.127 D. 6.445 47. A statue 3 m high is standing on a base of 4 m high. If an observer's eye is 1.5 m above the ground, how far should he stand from the base in order that the angle subtended by the statue is a maximum? A. 3.41 m B. 3.51 m C. 3.71 m D. 4.41 m 48. An iron bar 20 m long is bent to form a closed plane area. What is the largest area possible? A. 21.56 square meter B. 25.68 square meter C. 28.56 square meter D. 31.83 square meter 49. A Norman window is in the shape of a rectangle surmounted by a semi-circle. What is the ratio of the width of the rectangle to the total height so that it will yield a window admitting the most light for a given perimeter? A. 1 B. 2/3 C. 1/3 D. ½ 50. A rectangular field is to be fenced into four equal parts. What is the size of the largest field that can be fenced this way with a fencing length of 1500 feet if the division is to be parallel to one side? A. 65,200 B. 62,500 C. 64,500 D. 63,500 Online Question and Answer in Differential Calculus (Maxima/Minima and Time Rates) Series Following is the list of multiple choice questions in this brand new series: MCQ in Differential Calculus (Maxima/Minima and Time Rates) PART 1: MCQ from Number 1 – 50 Answer key: PART 1 PART 1: MCQ from Number 2 – 100 Answer key: PART 2 Online Question and Answer in Differential Calculus (Limits and Derivatives) Series Following is the list of multiple choice questions in this brand new series: MCQ in Differential Calculus (Limits and Derivatives) PART 1: MCQ from Number 1 – 50 Answer key: PART 1 PART 2: MCQ from Number 51 – 100 Answer key: PART 2 Page 4 (Last Updated On: January 6, 2021) Below are the answers key for the Multiple Choice Questions in Differential Calculus (Maxima/Minima and Time Rates) Part 1. 1. B. 2√2 Review: Solution for Number 1 2. C. 25 and 25 Review: Solution for Number 2 3. A. 15.59 cm2 Review: Solution for Number 3 4. A. 25 m x 25 m Review: Solution for Number 4 5. A. 125.50 Review: Solution for Number 5 6. B. 592.59 cu in. Review: Solution for Number 6 7. C. 22.24 cm, 44.5 cm Review: Solution for Number 7 8. A. 1 Review: Solution for Number 8 9. C. 2.44 Review: Solution for Number 9 10. C. 50 mph Review: Solution for Number 10 11. C. 2000 Review: Solution for Number 11 12. B. 2 m x 2 m x 2.5 m Review: Solution for Number 12 13. B. 200,000 Review: Solution for Number 13 14. B. 3.0 km Review: Solution for Number 14 15. B. 100 ft2 Review: Solution for Number 15 16. D. 12 kph Review: Solution for Number 16 17. A. 44% Review: Solution for Number 17 18. C. 1.50 m Review: Solution for Number 18 19. B. 2.24 Review: Solution for Number 19 20. D. 2 and 1 Review: Solution for Number 20 21. C. 3.71 m Review: Solution for Number 21 22. C. 8.33 fps Review: Solution for Number 22 23. A. 3.64 m/s Review: Solution for Number 23 24. A. 0.64 m/min Review: Solution for Number 24 25. C. 6.28 m3/sec Review: Solution for Number 25 26. A. 7/6 gph Review: Solution for Number 26 27. C. 10.32 m/sec Review: Solution for Number 27 28. D. 1.49 m/sec Review: Solution for Number 28 29. C. 12 ft/sec Review: Solution for Number 29 30. D. 45 kph Review: Solution for Number 30 31. B. 51 kph Review: Solution for Number 31 32. A. 67.08 kph Review: Solution for Number 32 33. C. 4 Review: Solution for Number 33 34. C. 0.0025 m Review: Solution for Number 34 35. C. -0.001 amp/sec Review: Solution for Number 35 36. D. 1 37. B. 9800 38. B. 200000 39. B. 2000 40. D. 2 41. D. 80 & 40 42. A. C2 / 2 43. C. 225 44. D. 6 km east of A 45. B. 3 km 46. C. 5.127 47. C. 3.71 m 48. D. 31.83 square meter 49. A. 1 50. B. 62,500 Online Question and Answer in Differential Calculus (Maxima/Minima and Time Rates) Series Following is the list of multiple choice questions in this brand new series: MCQ in Differential Calculus (Maxima/Minima and Time Rates) PART 1: MCQ from Number 1 – 50 Answer key: PART 1 PART 1: MCQ from Number 2 – 100 Answer key: PART 2 Online Question and Answer in Differential Calculus (Limits and Derivatives) Series Following is the list of multiple choice questions in this brand new series: MCQ in Differential Calculus (Limits and Derivatives) PART 1: MCQ from Number 1 – 50 Answer key: PART 1 PART 2: MCQ from Number 51 – 100 Answer key: PART 2

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