Worksheet: Applications of Derivatives

IB · Class 12 · Mathematics · 8 questions · 34 marks

Name: _____ Date: _____ Score: _____ / 34

Q1. Find the rate of change of the area of a circle with respect to its radius when r=5 cm. *[3 marks]*

Q2. Show that f(x)=7x-3 is increasing on R. *[3 marks]*

Q3. The side of a square is increasing at the rate of 3 cm/s. Find the rate of increase of its area when the side is 10 cm. *[4 marks]*

Q4. Find the local maxima and minima of f(x)=x^3-3x. *[5 marks]*

Q5. Use the second derivative test to classify the critical point of f(x)=x^2-4x+3. *[4 marks]*

Q6. Find the absolute maximum and minimum of f(x)=x^2 on [-3,1]. *[5 marks]*

Q7. Find two positive numbers whose sum is 20 and whose product is maximum. *[6 marks]*

Q8. The total cost function is C(x)=0.005x^3-0.02x^2+30x+5000. Find the marginal cost when x=10 units are produced. *[4 marks]*