

Worksheet: Applications of Derivatives

Odisha State Board · 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 $\mathbb{R}$. *[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]*
