

Worksheet: Application of Derivatives (Rate of Change, Tangents, Maxima/Minima)

Uttar Pradesh State Board · Class 12 · Mathematics · 3 questions · 14 marks

Name: _____

Date: _____

Score: _____ / 14

Q1. Find the equations of the tangent and normal to the curve $y = x^2 - 3x + 2$ at the point $(2, 4)$. [3 marks]

Q2. A window is in the form of a rectangle surmounted by a semicircular opening. The total perimeter of the window is 10 m. Find the dimensions of the window that will admit maximum light through the whole opening. [5 marks]

Q3. Prove that the volume of the largest cone that can be inscribed in a sphere of radius R is $\frac{8}{27}$ of the volume of the sphere. [6 marks]
