Practice worksheet | Differentiation and applications

Optimisation

Name: _____ Date: _____

6 questions | 24 marks

1. A rectangle has perimeter 28 m. Find its maximum area. [3 marks]

2. A three-sided pen beside a wall uses 80 m of fencing. Find optimal dimensions. [3 marks]

3. Squares of side x are cut from each corner of a 12 cm square to form an open box. Find the maximum volume. [4 marks]

4. A product costs $C(x) = x^2 + 100$ dollars to make $x > 0$ units. Minimise average cost per unit. [4 marks]

5. A point (x, x^2) lies on a parabola. Find its least distance from $(0, 2)$. [5 marks]

6. A closed cylinder has total surface area 24π square centimetres. Find its largest volume. [5 marks]