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so many fake sites. this is the first one which worked! Many thanks

GRADE 10 ADDITIONAL MATHEMATICS
SEMESTER 1 EXAM REVIEW

Name :
Class :
Date :

1. Differentiate the following with respect to x
   (a) $y = \left(x + \frac{2}{x}\right)^2$ [2]
   (b) $y = 5x^2 + \frac{7}{x} - 2\sqrt{x}$ [2]
   (c) $y = \frac{2x^4 + 5x^2 - 7}{x}$ [2]

2. The equation of a curve is $y = \frac{2}{3}x + \frac{1}{x}$.
   (i) Calculate the gradient of the curve at the point $x = 3$. [2]
   (ii) Find the coordinates of the points on the curve at which the tangent to the curve is parallel to the x-axis. [3]

3. Find the coordinates of the point P on the curve $y = 2x^2 - 3x + 5$ at which the gradient of the tangent at P is parallel to the line $x + 5y = 13$. [3]

4. Find the coordinates of the turning point of the curve $y = 10 + 27x - \frac{4}{x^3}$ and determine the nature of the turning point. [4]

5. The equation of a curve is $y = \frac{x^2 - 6x + 5}{x^2 + 2}$. Find
   (i) Find the range of values of x for which y is a decreasing function. [4]
   (ii) Find the coordinates of the turning points of the curve and determine the nature of these turning points. [4]

6. A closed right cylindrical can of base radius r cm and height h cm is to be constructed with thin materials of area 600π cm². Determine the value of r and h in order to construct a can with greatest possible volume. [6]

7. A piece of wire 100 cm is cut into two portions. One portion is bent to form a square of side x cm and other is bent to form a circle of radius r cm. Find the value of x if the total area of the square and the circle is to be a minimum. (Leave your answer in terms of π). [6]

8. The curve $y = 2x^3 + 3x^2 + kx - 4$ has a minimum point at $x = 1$. Find
   (i) the value of k, [3]
   (ii) the coordinates of the maximum point. [1]

9. The equation of a curve is $y = \frac{x-2}{2x+1}$. Find
   (i) $\frac{dy}{dx}$ [2]
   (ii) the equation of the normal to the curve at the point at which the curve cuts the x-axis, [3]
   (iii) the equation of the tangent to the curve at the point at which the curve cuts the y-axis. [3]

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