

Total Time: 25 minutes	Marks: 22 marks	Total Marks: 40
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Methods 3&4

Review Response Test 1

(Wed Mar 31st)

Resource Free

ClassPad calculators are NOT permitted.
Formulae sheet is permitted.

Name: _____

9. [6 marks]
- The owner of a garden centre wishes to fence a rectangular area of 360 m². She wishes to fence three sides with fencing that costs \$5/m and the fourth side with fencing costing \$11/m.
Show the use of calculus to find the dimensions of the rectangular area that will minimise her fencing costs.

1. [1, 2 & 2 = 5 marks]

Find the following indefinite integrals.

(a) $\int 4\sqrt{x} \, dx$

(b) $\int (3x-2)^3 \, dx$

(c) $\int (x^2 + 2)^2 \, dx$

2. [4 marks]

Find the area bounded between the graph of $y = 3x(x-4)$ and the x-axis.

8. [2, 2 & 1 = 5 marks]

(a) Find the coordinates of the points where the curve $y = \frac{3x^2}{2x+1}$ cuts the line $y = 2x - 1$.

(b) Find the gradient of curve $y = \frac{3x^2}{2x+1}$ at each point where it cuts the line $y = 2x - 1$.

(c) Find the equation of the tangent to the curve $y = \frac{3x^2}{2x+1}$ at the point with x-coordinate of 2.

6. [4 marks]

Given that $f(x) = ax^3 + bx^2 + 2x + 1$, $f'(1) = 9$ and $f''\left(\frac{1}{3}\right) = 4$, find the value of the constants a and b .

7. [3 marks]

Showing the use of definite integrals (without absolute value), find the area enclosed between the graphs of $y_1 = 3x + 6$ and $y_2 = x(x + 2)(x - 2)$

3. [3 marks]

Find the equation of the tangent to the curve $y = \frac{2x - 1}{x - 1}$ at the point $(2, 3)$ giving your answer in the form $y = mx + c$.

4. [4 marks]

Find the x-coordinates of the points on the graph of $y = x^2(2x + 3)$ where the gradient is 12.

5. [6 marks]

Use calculus techniques to determine the coordinates, and their nature, of any stationary points on the curve with equation $y = 2x + \frac{18}{x}$.

End of Calculator-Free Section

**ST HILDA'S**
ANGLICAN SCHOOL FOR GIRLS INC.

Total Time: 20 minutes
Marks: 18 marks

Methods 3&4
Review Response Test 1
(Wed Mar 31st)**Resource Assumed**

ClassPad calculators **ARE** permitted.
Formulae sheets are permitted.

Name: _____