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ST HILDA'S
ANGLICAN SCHOOL FOR GIRLS INC.

Total Time:	25 minutes
Marks:	22 marks
Total Marks:	___ 40

Methods 3&4

Review Response Test 1

(Wed Mar 31st)

Resource Free

ClassPad calculators are NOT permitted.
Formulae sheet is permitted.

Name: _____

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.

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: _____

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 $y_2 = x(x+2)(x-2)$

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.

9. [6 marks]

The owner of a garden centre wishes to fence a rectangular area of 360 m^2. 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.

End of Calculator-Assumed Section