SHENTON COLLEGE

Year 11 Mathematics Methods (AEMAM)

Test 5 2016

Calculator Free

Time Allowed: 20 minutes

Marks / 25

Name: .....

Circle Your Teachers Name: McRae Friday Mackenzie

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1. [5,2 marks]

(a) Show use of calculus methods to determine the coordinates and nature of any stationary points of the function $f(x) = 3x^2 - x^3$.

(b) Determine the minimum and maximum values of $f(x)$ if $-2 \leq x \leq 3$

2. [2,3 marks]

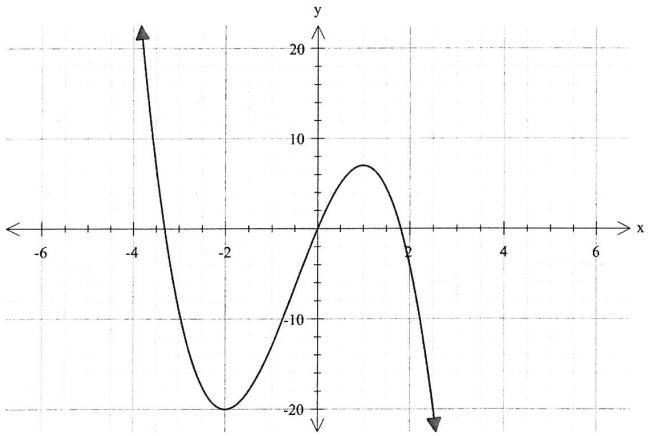
Determine the antiderivative of:

(i) $\frac{dy}{dx} = 3x^3 + 4$

(ii) $\frac{dy}{dx} = \frac{9x^3 - 8x^4}{x^2}$

3. [3 marks]
The function $y = x^3 + ax + b$ has a local minimum point at (2,3). Use differentiation to find the values of a and b.

4. [3,2 marks]
Below is a graph of y = f(x)



a) State the value(s) of x for which:

i) f ' (x) < 0

ii) f ' (x) = 0

iii) f ' (x) > 0

b) On the grid above, draw a possible graph of y = f ' (x)

5. [3,2 marks]

(a) Determine the rule for the curve that passes through (1,-1) with a gradient function $f'(x) = 6(1 - x^2)$.

(b) Find the equation of the tangent to the curve at the point (2,-9)

End of Section 1