



SHENTON
COLLEGE

ATMAM Mathematics Methods

Test 2 (2019)

Calculator Free

Name:

Teacher: Friday Smith Ai

Time Allowed : 18 minutes

Marks	/23
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Materials allowed: Formula Sheet.

Attempt all questions. Questions 1 to 4 are in this section.

All necessary working and reasoning must be shown for full marks.

Marks may not be awarded for untidy or poorly arranged work.

1 Determine the following indefinite integrals.

a) $6 \int 3x^2 - 4x \, dx$ (2)

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

c) $\int 2x(2x + 1)^2 \, dx$ (2)

d) $\int (3x + 5)^4 dx$ (1)

e) $\int \frac{4x - 1}{x^3} dx$ (2)

2 Evaluate the following definite integrals.

a) $\int_1^5 \sqrt{3x + 1} dx$ (4)

b) $\int_0^{\pi} \sin(x) dx$ (3)

3 a) Find, in terms of x , (2)
 $\frac{d}{dx} \int_x^1 (u^2 - 4)^3 du$

b) $\frac{d}{dx} \left(x^2 \int_0^{\pi} \sin y dy \right)$ (2)

4 If $f(x) = \frac{1-x}{\sqrt{1+x}}$, evaluate $\int_1^3 f'(x) dx$ (2)