SHENTON COLLEGE

ATMAM Mathematics Methods

Test 2 (2018) Calculator Free

Name: .....

Teacher: Friday Smith

Time Allowed : 30 minutes

Marks /36

Materials allowed: Formula Sheet.

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) $\int 12x^3 - 4x\,dx$ (1)

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

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

d) $\int e^{3x-2}\,dx$ (2)

e) $\int 3(4-2x)^5\,dx$ (2)

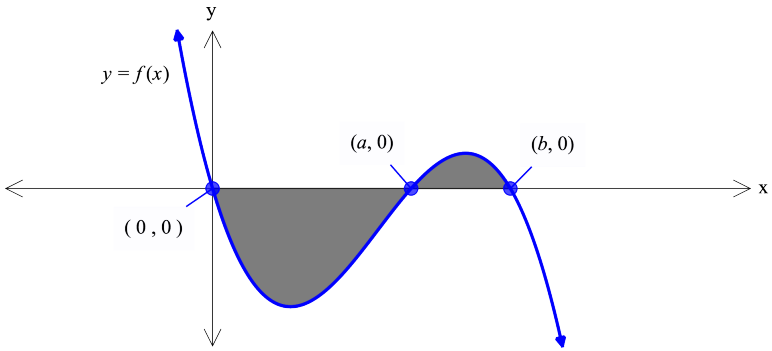
2 Evaluate the following definite integrals

a) $\int_1^4 3x^2+1\,dx$ (2)

b) $\int_{-1}^2 \pi\,dx$ (2)

c) $\int_0^{\frac{\pi}{4}} \sin 2x \ dx$ (5)

3 Circle all of the expressions that would give the area shaded below. (4)



$\int_0^b f(x)dx$

$\left|\int_0^b f(x)dx\right|$

$-\int_0^a f(x)dx + \int_a^b f(x)\,dx$

$\int_0^a f(x)dx - \int_a^b f(x)\,dx$

$\int_0^a f(x)dx + \int_a^b f(x)\,dx$

$\int_a^0 f(x)dx + \int_a^b f(x)\,dx$

$\left|\int_0^a f(x)dx\right| + \left|\int_a^b f(x)\,dx\right|$

$\int_0^b |f(x)|dx$

4 If $f''(x) = 6x - 2$ and given that $f(2) = 9$ and $f(-1) = -6$, determine $f(x)$. (7)

5 Determine the area trapped between the curve $y = x^3 - 3x + 3$ and the line $y = x + 3$. (6)