

## LC 2013 (SET D): PAPER 1

### QUESTION 2 (25 MARKS)

#### Question 2 (a)

$$f(x) = 6x - x^2$$

$$f(0) = 6(0) - 0^2 = 0 - 0 = 0$$

$$f(1) = 6(1) - 1^2 = 6 - 1 = 5$$

$$f(2) = 6(2) - 2^2 = 12 - 4 = 8$$

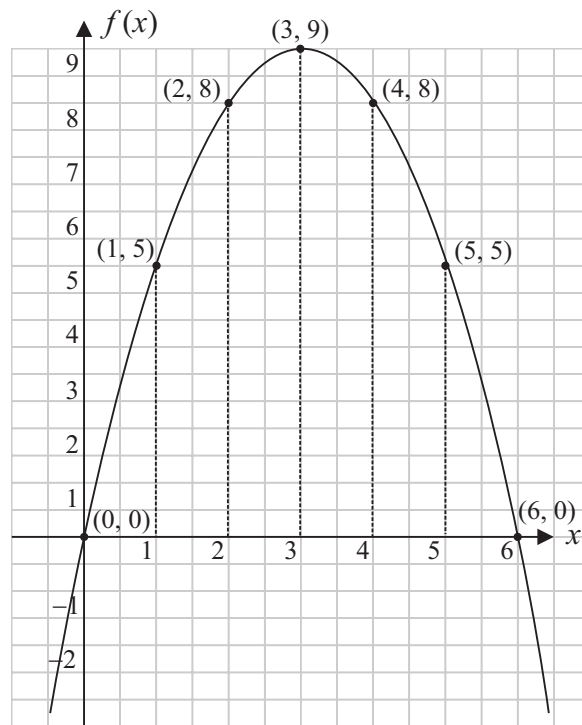
$$f(3) = 6(3) - 3^2 = 18 - 9 = 9$$

$$f(4) = 6(4) - 4^2 = 24 - 16 = 8$$

$$f(5) = 6(5) - 5^2 = 30 - 25 = 5$$

$$f(6) = 6(6) - 6^2 = 36 - 36 = 0$$

$x$	0	1	2	3	4	5	6
$f(x)$	0	5	8	9	8	5	0



#### Question 2 (b)

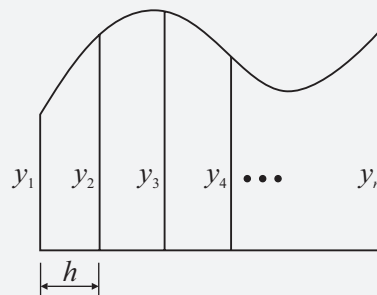
$$h = 1$$

$$A = \frac{1}{2}[0 + 0 + 2(5 + 8 + 9 + 8 + 5)]$$

$$= \frac{1}{2}[2(35)]$$

$$= 35$$

#### FORMULAE AND TABLES BOOK Area approximations [page 12]



$$A \approx \frac{h}{2}[y_1 + y_n + 2(y_2 + y_3 + y_4 + \dots + y_{n-1})]$$

#### MARKING SCHEME NOTES

##### Question 2 (a) [Scale 10D (0, 2, 5, 8, 10)]

- 2: • One or two correct values only in the table
- 5: • Three or four correct values only in the table
- 8: • Five or six correct values in the table

##### Question 2 (b) [Scale 15C (0, 5, 10, 15)]

- 5: • Writes the correct trapezoidal rule, without further work of merit
- Simpson's rule with substantially correct substitution and calculation
- 10: • Trapezoidal rule with correct substitution
- Trapezoidal rule with incorrect substitution (maximum of 2) with correct calculation
- Correct answer without work shown

**NOTE:** Formula and correct answer, without work shown, award full credit