



1. Evaluate $\int_1^3 (4x - 1)dx$

(2)

2. Evaluate $\int_1^4 (x^3 - 2x - 7)dx$

(3)

3. Given that $\int_1^4 (3x^2 + ax - 5)dx = 18$, find the value of the constant a .

(3)

4. Given that $\int_{-1}^k (3x^2 - 12x + 9)dx = 16$, find the value of the constant k .

(5)

Solutions

1.

$[2x^2 - x]_1^3$	M1
$= (18 - 3) - (2 - 1)$	M1
$= 14$	

2.

$= [\frac{1}{4}x^4 - x^2 - 7x]_1^4$	M1
$= (64 - 16 - 28) - (\frac{1}{4} - 1 - 7)$	M1
$= 27.75$	

3.

$[x^3 + \frac{1}{2}ax^2 - 5x]_1^4$	M1
$= (64 + 8a - 20) - (1 + \frac{1}{2}a - 5)$	M1
$= 48 + \frac{15}{2}a$	
$48 + \frac{15}{2}a = 18$ $a = -4$	M1

4.

$[x^3 - \frac{1}{2}6x^2 + 9x]_{-1}^k$	M1
$= (k^3 - 6k^2 + 9k) - (-1 - 6 - 9)$	M1
$= k^3 - 6k^2 + 9k + 16$	
$k^3 - 6k^2 + 9k + 16 = 16$ $k(k^2 - 6k + 9) = 0$ $k(k - 3)^2 = 0$	M1
$k = 0$ or $k = 3$	M1
As k cannot be 0, $k = 3$	M1

