

INTENSIVE REVISION QUESTIONS (ERQ)
SET 14 ;INTEGRATION 1

Name :

Form :

Teacher:

1. Find the constant of integration by using the given information.

$$\frac{dy}{dx} = 28x^3 - 4x + 6 \text{ and } y = 27 \text{ when } x = 1. \quad [3 \text{ marks}]$$

2. Find the equation of the curve with gradient function,

$$\frac{dy}{dx} = 2x + 1, \text{ and passing through } (-3, -13). \quad [2 \text{ marks}]$$

3. Evaluate each of the following.

(a) $\int_0^4 (-10x - 2) dx$

(b) $\int_4^0 (-10x - 2) dx \quad [3 \text{ marks}]$

4. Find the equation of the curve with gradient function,

$$\frac{dy}{dx} = 14x + 4, \text{ and passing through } (-3, -8). \quad [2 \text{ marks}]$$

5. Find the equation of the curve with gradient function,

$$\frac{dy}{dx} = 2x - 9, \text{ and passing through } (-5, 5). \quad [2 \text{ marks}]$$

6. Integrate each of the following with respect to x .

(a) -4

(b) $-10x^5 \quad [3 \text{ marks}]$

7. Find the volume of revolution when region bounded by the curve $x = y(y - 4)$, the y -axis and the lines $y = 4$ and $y = 7$ is rotated about the y -axis completely.

[4 marks]

8. Find the volume of revolution when region bounded by the curve $x = y(y - 4)$, the y -axis and the lines $y = 1$ and $y = -1$ is rotated about the y -axis completely.

[4 marks]

9. Integrate $9x^{12} + 2$ with respect to x .

[2 marks]

10. Integrate each of the following with respect to x .

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- (a) $\int (7x + 9)^5 dx$
- (b) $\int \frac{1}{(7x + 9)^5} dx$ [4 marks]
11. Given that $\int_5^2 g(x) dx = 6$, find $\int_2^5 7[g(x) + 6] dx$. [2 marks]
12. Integrate $7x^4 + 9$ with respect to x . [2 marks]
13. Find the constant of integration by using the given information.
 $\frac{dy}{dx} = 4x^3 - 12x + 7$ and $y = 3$ when $x = 2$. [3 marks]
14. Given that $\int (px^q + 84x) dx = 4x^9 + 6rx^2 + c$, find the values of p , q and r . [2 marks]
15. Given that $\int_{-3}^2 g(x) dx = 8$, find $\int_2^{-3} 7[g(x) - 2] dx$. [2 marks]
16. Find the volume of revolution when region bounded by the curve $y = x^3 - 8$, the x -axis and the line $x = -5$ is rotated completely about the x -axis. [4 marks]
17. Integrate each of the following with respect to x .
- (a) $\int (9x - 12)^7 dx$
- (b) $\int \frac{1}{(9x - 12)^7} dx$ [4 marks]
18. Integrate each of the following with respect to x .
- (a) -5
- (b) $6x^{-5}$ [3 marks]
19. Find the constant of integration by using the given information.
 $\frac{dy}{dx} = 24x^3 - 10x + 7$ and $y = 13$ when $x = 1$. [3 marks]
20. Evaluate each of the following.
- (a) $\int_{-1}^{-3} (24x + 2) dx$
- (b) $\int_{-3}^{-1} (24x + 2) dx$ [3 marks]

Answers:

1. 16

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2. $y = 1x^2 + 1x - 19$

3. (a) -88 (b) 88

4. $y = 7x^2 + 4x - 59$

5. $y = 1x^2 - 9x - 65$

6. (a) $-4x + c$

(b) $\frac{-5x^6}{3} + c$

7. $354.60\pi \text{ unit}^3$

8. $11.07\pi \text{ unit}^3$

9.

$$\frac{9x^{13}}{13} + 2x + c$$

10.

(a) $\frac{(7x+9)^6}{42} + C$

(b) $\frac{1}{-28(7x+9)^4} + C$

11. 84

12.

$$\frac{7x^5}{5} + 9x + c$$

13. -3

14. $p = 36, \quad q = 8, \quad r = 7$

15. 14

16. $14063.00\pi \text{ unit}^3$

17.

(a) $\frac{(9x-12)^8}{72} + C$

(b) $\frac{1}{-54(9x-12)^6} + C$

18. (a) $-5x + c$

(b) $\frac{3x^{-4}}{-2} + c$

19. 5

20. (a) 92 (b) -92

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