

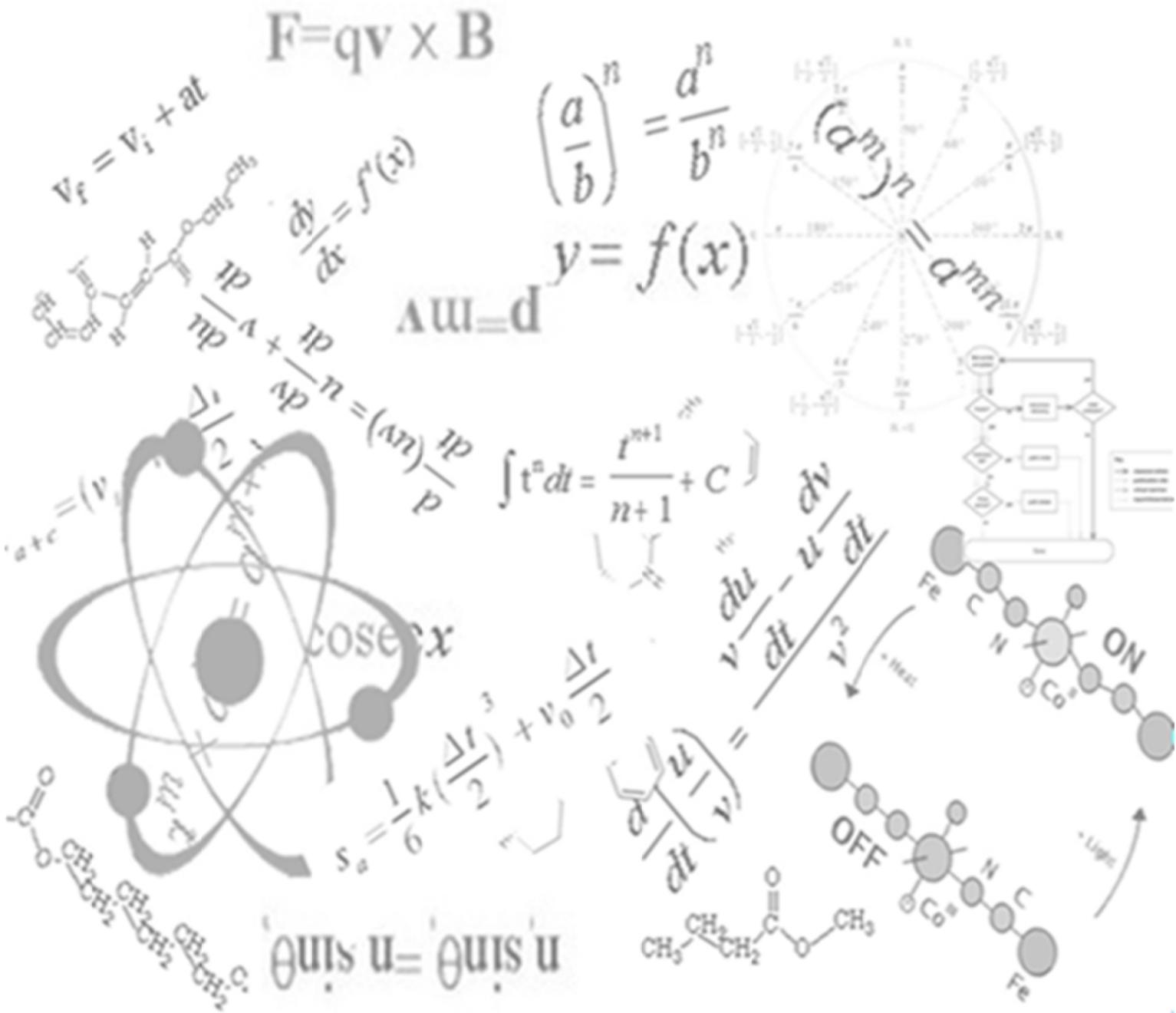


where students come first!



# Year 12- Mathematics Advanced

## Integration



# Integration Exam /25

1. (2 marks)

$$\text{Integrate } \int 3x^2 + 2x + 6 dx$$

2. (3 marks)

$$\text{Integrate } \int \sqrt{x+2} dx$$

3. (3 marks)

$$\text{Integrate } \int_2^5 \frac{1}{\sqrt{x-1}} dx$$

4. (1 marks)

$$\text{Integrate } \int \sec^2 4x dx$$

5. (3 marks)

Find the volume of revolution of the curve  $y = \frac{2}{\sqrt{x-1}}$  between  $x=2$  and  $x=3$ .

6. (2 marks)

$$\text{Find } \int_0^{\frac{\pi}{8}} \sec 2x \tan 2x dx$$

7. (4 marks)

Calculate the area of the region in between  $y=x^2 - 2x$  and  $y=4-x^2$ .  
solving simultaneously:

8. (2 marks)

$$\text{Integrate } \int_2^5 e^{2x^2-4} dx$$

9. (2 marks)

Use the trapezoidal rule with 4 function values to find the value of

$$\int_0^2 (3x^2 - 1) dx$$

10. (3 marks)

Use the Simpson's rule with 5 function values to find an approximation for

$$\int_1^5 \frac{3}{x^2} dx$$

