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S4S coaching

Year 12- Mathematics Advanced

Logarithmic and Exponential Functions
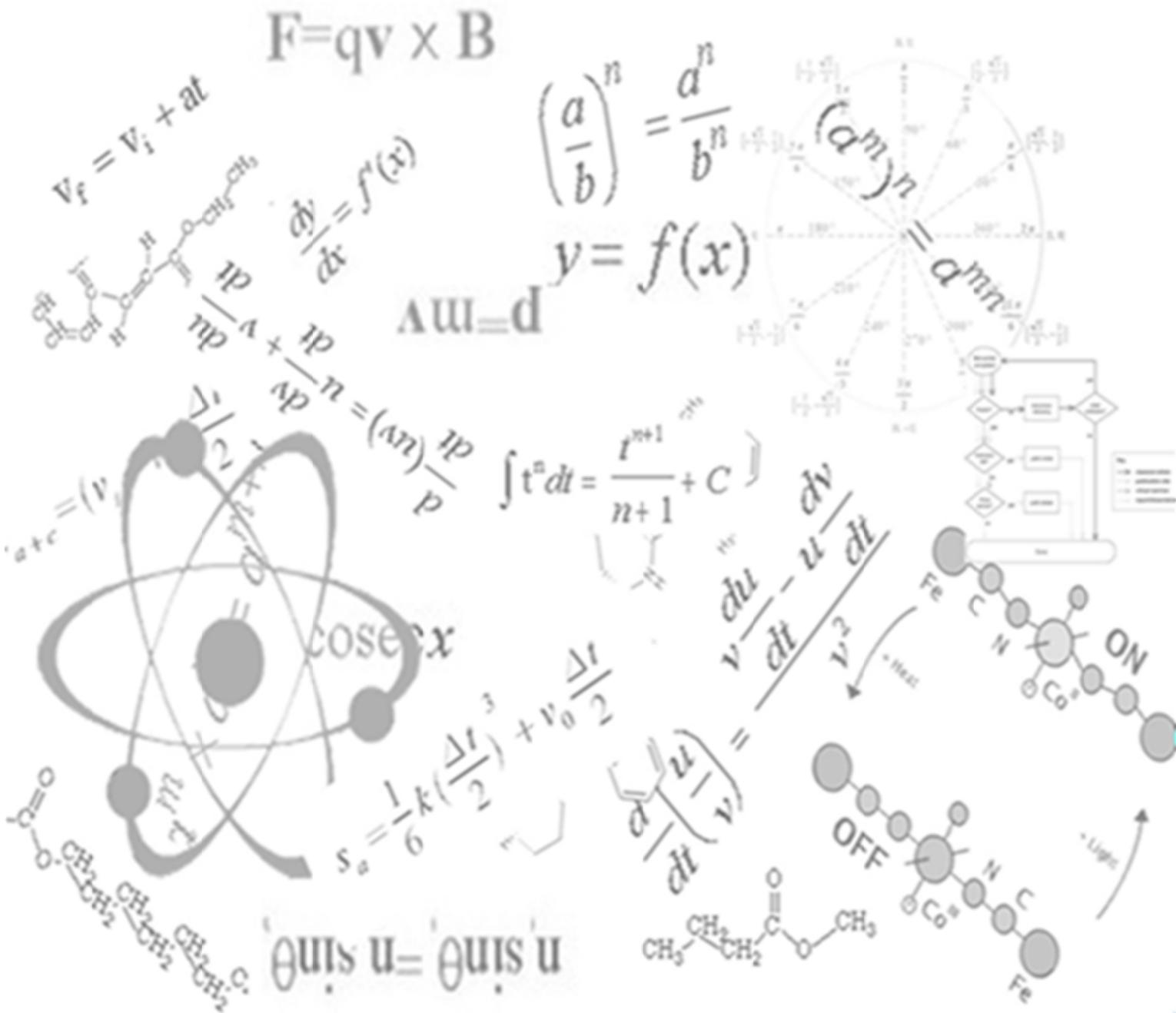
Exponential and Logarithms Exam   /30

1.   (**1 marks**)
Simplify $e^{2\ln 4}$

2.   (**2 marks**)
If $f(x)=x^{-e}e^{x}$, find f'(x).

3.   (**2 marks**)
Find $\frac{dy}{dx}$ of $y = \ln(e^{2}x^{3})$

4.   (**2 marks**)
Find $\int (\frac{e^{2}}{x} + \frac{x^{2}}{e})dx$

5.   (**2 marks**)
Find $\frac{dy}{dx}$ of $y=e^{-x}\tan x$

6.   (**2 marks**)
Find $\frac{dy}{dx}$ of $y=\frac{x^{3}}{\ln x}$

7.   (**4 marks**)
Find the volume generated when the region enclosed by $y=1-2e^{2x}$ for $0\leq x \leq 2$ is rotated about the x-axis.

8.   (**3 marks**)
Find $\frac{dy}{dx}$ given $y=\log_{e}(\frac{2x+1}{3x-7})$

9.   (**6 marks**)
Consider the function $f(x)=e^{-x}\sin x$ for $0\leq x \leq 2\pi$
i) find the x coordinates where the stationary points occur and determine their nature
ii) sketch the curve showing all important features

10.   (**6 marks**)
Sketch the curve $y = \ln(x + 2)$ and hence find the area in between y=0 and the y-intercept about the y-axis.