

INSTRUCTIONS: Use an HB pencil on the scantron card. Circle the correct answer to each question on this paper. You must hand in question paper, your scantron card and any rough work sheets. NO CALCULATORS ARE ALLOWED!

1. Simplify $\log_3 36 - \log_3 4$.

A: 32	B: 2	C: 12	D: 9	E: -144
-------	------	-------	------	---------

2. If $f(x) = xe^{x^2}$, find $f'(2)$.

A: $9e^4$	B: e^4	C: $2e^4$	D: $3e^4$	E: $5e^4$
-----------	----------	-----------	-----------	-----------

3. If $f(x) = \log_2 x$, find $f'(1)$.

A: $\ln 2$	B: 0	C: 1	D: $\frac{1}{\ln 2}$	E: 2
------------	------	------	----------------------	------

4. Evaluate $\lim_{h \rightarrow 0} \left(\frac{2^{3+h} - 2^3}{h} \right)$ by recognizing it as the value of a certain derivative.

A: 2	B: $8 \ln 2$	C: 8	D: $\frac{8}{\ln 2}$	E: $\ln 3$
------	--------------	------	----------------------	------------

5. If $f(x) = (2x + 3)^x$, find $f'(1)$.

A: $5 \ln 5 + 2$	B: 10	C: $\ln 5 + \frac{2}{5}$	D: 2	E: 1
------------------	-------	--------------------------	------	------

6. Evaluate $\int \frac{x^3 + x}{x^2} dx$.

A: $\frac{\frac{x^4}{4} + \frac{x^2}{2}}{\frac{x^3}{3}} + C$	B: $\frac{x^2}{2} + \ln x + C$	C: $\frac{x^4}{4} + \ln x + C$
D: $\left(\frac{x^4}{4} + \frac{x^2}{2} \right) \ln x^2 + C$	E: $x^2 + C$	

7. If $\int \frac{12x - 11}{(x - 5)(x + 2)} dx = A \ln |x - 5| + B \ln |x + 2| + C$, find the value of A.

A: 5	B: 12	C: 11	D: -2	E: 7
------	-------	-------	-------	------

8. $\int \frac{\ln x}{x} dx =$

A: $(\ln x)^2 - 1 + C$	B: $\frac{1}{2} \ln(x^2) + C$	C: $\frac{1}{2} (\ln x)^2 + C$	D: $\ln x + C$	E: $\frac{(\ln x)^2}{x^2} + C$
------------------------	-------------------------------	--------------------------------	------------------	--------------------------------

9. Evaluate $\int_0^1 xe^{2x} dx$.

A: $\frac{1}{4}$	B: $\frac{3e^2 + 1}{4}$	C: $\frac{e^2 - 1}{4}$	D: 0	E: $\frac{e^2 + 1}{4}$
------------------	-------------------------	------------------------	------	------------------------

10. Evaluate $\int_0^2 \frac{3x^2}{(x^3 + 1)^{1/2}} dx$.

A: $2\sqrt{2}$	B: $\frac{52}{3}$	C: 1	D: 4	E: 6
----------------	-------------------	------	------	------