

**M203 (02)**

Differentiate. Do not simplify your answers.

1.  $f(x) = \frac{\ln x}{x^2}$

2.  $h(t) = (3t^2 + 4t + 1)^5(7t + 3)$

3.  $r(s) = e^{5s + \ln 3}$

4.  $y = \cos^2(x)$

5.  $f(x) = \sqrt{x} + \frac{1}{\sqrt[5]{x^3}}$

6. Evaluate the indefinite integral  $\int \frac{e^{\frac{1}{x}}}{x^2} dx$ .

7. Evaluate the indefinite integral  $\int x\sqrt{x-1} dx$ .

8. Evaluate the indefinite integral  $\int x \sin(2x + 5) dx$ .