Instructions

Target time:

- Less than 2 m 30s.

- Repeat this activity daily until you achieve **100% in the target time on 2 consecutive days**.
- The goal is to answer the questions **quickly** and **correctly**.
  - When you achieve fluency, it will require very little mental effort.

Step 1: Set a stopwatch to time yourself.

Step 2: Answer all questions on lined paper in **timed conditions**.

- Guess if you don't know the answer.

Step 2: **Check your answers** using the solutions on the reverse of this page.

Step 3: Fill in one of the marking columns below (enter the date in the heading).

Step 4: Use the solutions to **correct any mistakes**.

	Question								
1.	$\int \sin 2x \, dx = \ldots$								
2.	Product rule formula								
3.	$\frac{d}{dx} \cos 2x = \ldots$								
4.	Chain rule formula								
5.	$\frac{d}{dx} \ln(3x + 1) = \ldots$								
6.	Quotient rule formula								
7.	$\int \frac{2}{6x - 1} dx = \ldots$								
8.	$\int e^{5x+2} \, dx = \ldots$								
9.	$\frac{d}{dx} \sin 2x = \ldots$								
10.	$\int \cos 2x \, dx = \ldots$								

	Question	Solution
1.	$\int \sin 2x\, dx = \ldots$	$\int \sin 2x\, dx = -\frac{1}{2}\cos 2x + c$
2.	Product rule formula	$\frac{dy}{dx} = u\frac{dv}{dx} + v\frac{du}{dx}$
3.	$\frac{d}{dx}\cos 2x = \ldots$	$\frac{d}{dx}\cos 2x = -2\sin 2x$
4.	Chain rule formula	$\frac{dy}{dx} = \frac{dy}{du} \times \frac{du}{dx}$
5.	$\frac{d}{dx}\ln(3x+1) = \ldots$	$\frac{d}{dx}\ln(3x+1) = \frac{3}{3x+1}$
6.	Quotient rule formula	$\frac{dy}{dx} = \frac{v\frac{du}{dx} - u\frac{dv}{dx}}{v^2}$
7.	$\int \frac{2}{6x-1}\, dx = \ldots$	$\int \frac{2}{6x-1}\, dx = \frac{1}{3}\ln\lvert 6x-1 \rvert + c$
8.	$\int e^{5x+2}\, dx = \ldots$	$\int e^{5x+2}\, dx = \frac{1}{5}e^{5x+2} + c$
9.	$\frac{d}{dx}\sin 2x = \ldots$	$\frac{d}{dx}\sin 2x = 2\cos 2x$
10.	$\int \cos 2x\, dx = \ldots$	$\int \cos 2x\, dx = \frac{1}{2}\sin 2x + c$