Directions: Show all work and simplify your answers

1. **Evaluate the following indefinite integrals**

   a) $\int (x^4)^{\frac{1}{3}} + 7x^{2.5} dx$

   b) $\int \frac{1 - \sin^3(x)}{\sin^2(x)} dx$

   c) $\int \frac{\sin(2x)}{\sin(x)} dx$

2. **Evaluate the following definite integrals**

   a) $\int_{-1}^{1} \pi dx$

   b) $\int_0^5 (4t - 5t^2)\sqrt{t} dt$

c) $\int_0^5 (1 + u^3) du$

3. **Verify if the differentiation formula is correct. If not correct it**

   a) $\int \cos^2(x) dx = 0.5x + 0.25\sin(2x) + C$

   b) $\int \pi^5 dx = 5\pi^4 + C$

   c) $\int \sec(x)(\sec(x) + \tan(x)) dx = \sec^2(x) + C$