

## MAT126.R01: QUIZ 4

### SOLUTIONS

Evaluate the following integrals:

$$(a) \int \sqrt[7]{x} + \sin x \, dx = \int x^{1/7} \, dx + \int \sin x \, dx = \frac{x^{1/7+1}}{1/7+1} - \cos x + C = \frac{7x^{8/7}}{8} - \cos x + C$$

$$(b) \int_1^e \frac{3}{x} \, dx = 3 \int_1^e \frac{1}{x} \, dx = 3 \ln x \Big|_1^e = 3 \ln e - 3 \ln 1 = 3(1) - 3(0) = 3$$

$$(c) \int_{-1}^1 x^3 + 2x^2 - 4x + 3 \, dx = \frac{x^4}{4} + 2\frac{x^3}{3} - 4\frac{x^2}{2} + 3x \Big|_{-1}^1 = \left( \frac{1^4}{4} + 2\frac{1^3}{3} - 4\frac{1^2}{2} + 3(1) \right) - \left( \frac{(-1)^4}{4} + 2\frac{(-1)^3}{3} - 4\frac{(-1)^2}{2} + 3(-1) \right) = \frac{1}{4} + \frac{2}{3} - 2 + 3 - \frac{1}{4} + \frac{2}{3} + 2 + 3 = \frac{22}{3}$$