

Quiz 2

This quiz is graded out of 10 marks. No books, calculators, notes or cell phones are allowed. You must show all your work, the correct answer is worth 1 mark the remaining marks are given for the work. If you need more space for your answer use the back of the page.

Question 1. (1 mark each) Integrate the following indefinite integrals:

a.

$$\int \frac{1}{x^{3/7}} dx = \int x^{-3/7} dx = \frac{x^{4/7}}{4/7} = \frac{7x^{4/7}}{4} + C$$

b.

$$\int \sec x dx = \ln |\sec x + \tan x| + C$$

c.

$$\int \cot x dx = \ln |\sin x| + C$$

d.

$$\int \frac{1}{x\sqrt{x^2-3}} dx = \int \frac{1}{x\sqrt{x^2-(\sqrt{3})^2}} dx = \frac{1}{\sqrt{3}} \operatorname{arcsec} \frac{x}{\sqrt{3}} + C$$

e.

$$\int \frac{1}{x} dx = \ln |x| + C$$

f.

$$\int \sin x dx = -\cos x + C$$

Question 2. (4 marks) §4.7 #29 Given that the graph of f passes through the point $(1, 6)$ and that the slope of its tangent line at $(x, f(x))$ is $2x + 1$, find $f(2)$.

$$\text{So } f(1) = 6 \text{ and } f'(x) = 2x + 1$$

$$f(x) = \int f'(x) dx = \int 2x + 1 dx = x^2 + x + C$$

$$\text{and since } f(1) = 6$$

$$1^2 + 1 + C = 6$$

$$C = 4$$

$$\therefore f(x) = x^2 + x + 4$$

$$\therefore f(2) = 2^2 + 2 + 4 = 10$$