



WEEKLY QUIZ • TERM 3 WEEK 1

Calculus Quiz (SAMPLE)

HSC Maths Extension 1 • Year 12

STUDENT NAME

DATE

PART A

Quiz

Question 1

1 mark

Find $\int (2x + 3)^6 dx$

Question 2

2 marks

Find $\int \sqrt{x^2 - 2x^3} dx$

Question 3

2 marks

Find $\frac{d}{dx} \left(\frac{x^2}{1+x^2} \right)$, and hence find $\int \frac{x}{(1+x^2)^2} dx$.

Question 4

2 marks

Find

$$\int \frac{\sqrt{x}}{\sqrt{1+x^{3/2}}} dx$$

Question 5

4 marks

(a) Show that:

$$\frac{d}{dx} \left(x \sin^{-1}(2x) + \frac{1}{2} \sqrt{1-4x^2} \right) = \sin^{-1}(2x)$$

(b) Hence, find

$$\int_0^{\frac{\sqrt{3}}{4}} \sin^{-1}(2x) dx$$

END OF WORKSHEET