

AQA – Integration – A2 Mathematics P2

1. June/2020/Paper_2/No.5

Use integration by substitution to show that

$$\int_{-\frac{1}{4}}^6 x\sqrt{4x+1} \, dx = \frac{875}{12}$$

Fully justify your answer.

[6 marks]

2. June/2019/Paper_2/No.5

Solve the differential equation

$$\frac{dt}{dx} = \frac{\ln x}{x^2 t} \quad \text{for } x > 0$$

given $x = 1$ when $t = 2$ Write your answer in the form $t^2 = f(x)$ **[7 marks]**

3. June/2019/Paper_2/No.9(c-d)

(c) Hence, find an approximation for

$$\int_0^{0.4} \sqrt{\cos x} \, dx$$

giving your answer to five decimal places.

Fully justify your answer.

[4 marks]

(d) A student decides to use this method to find an approximation for

$$\int_0^{1.4} \sqrt{\cos x} \, dx$$

Explain why this may not be a suitable method.

[1 mark]
