

Books, watches, notes or cell phones are **not** allowed. The **only** calculators allowed are the Sharp EL-531***. You **must** show all your work, the correct answer is worth 1 mark the remaining marks are given for the work.

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

a.

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

b.

$$\int \sec x dx$$

c.

$$\int \cot x dx$$

d.

$$\int \frac{1}{x\sqrt{x^2-11}} dx$$

e.

$$\int \frac{1}{x} dx$$

f.

$$\int \sin x dx$$

Question 2. (4 marks) Find f .

$$f''(\theta) = 3 \sin \theta + 2 \cos \theta \quad f(0) = 0, \quad f(\pi) = 0$$