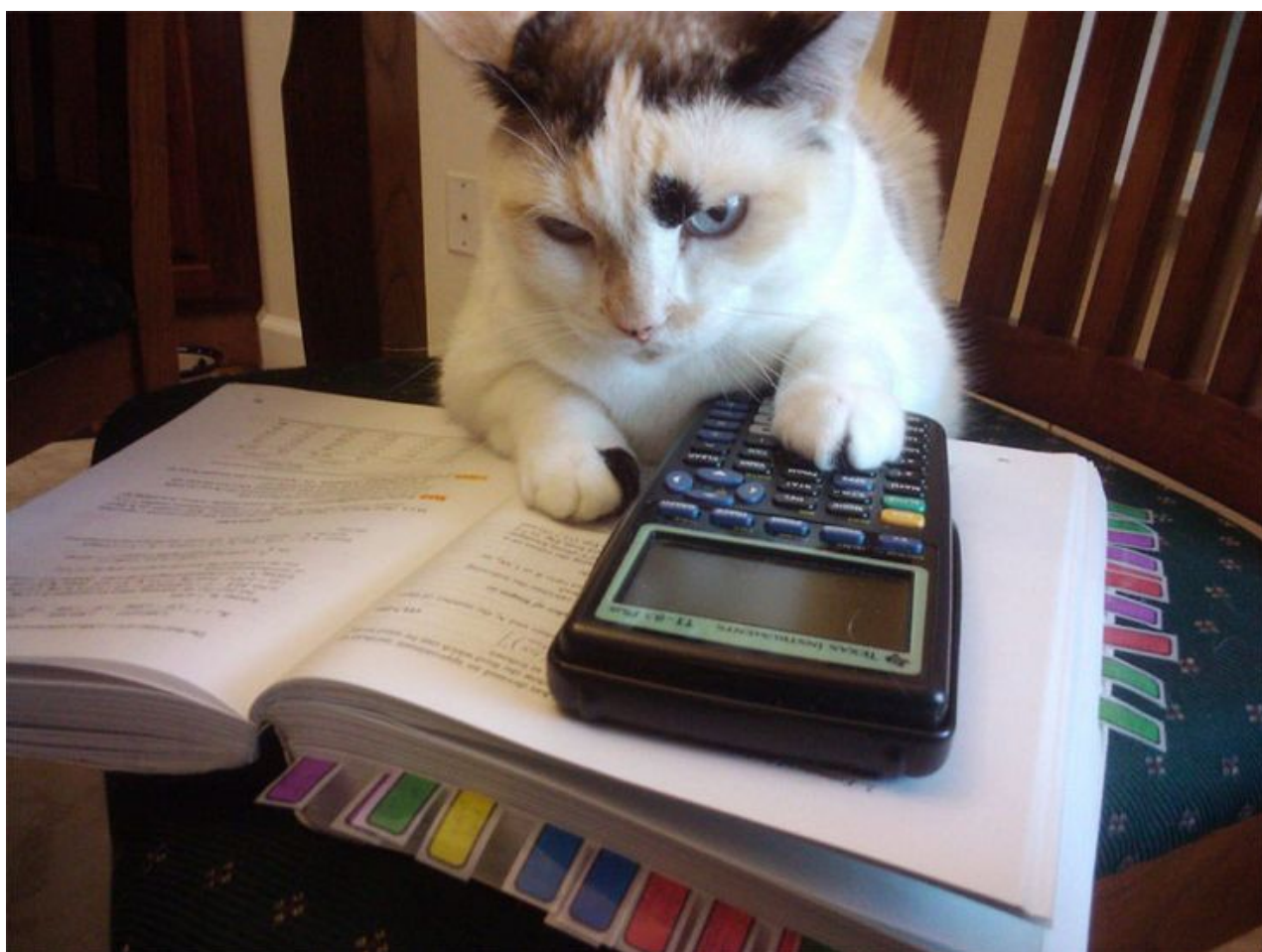


Speshlist Mathematics

IA3 Exam Worked Examples



Example 4.5:

2 Integration and applications of integration

Example 11.14:

Evaluate the following:

(a) $\int \cos^2 x \, dx$

(c) $\int \sin(2x) \cos(2x) \, dx$

(e) $\int \sin^3 x \cos^2 x \, dx$

(b) $\int \tan^2 x \, dx$

(d) $\int \cos^4 x \, dx$

Determine $\int x^2 e^x dx$.

3 Vector calculus

Example 8.18:

The position vector of a particle at time t is given by $\mathbf{r}(t) = 2 \sin(2t)\mathbf{i} + \cos(2t)\mathbf{j} + 2t\mathbf{k}$, where $t \geq 0$

- (a) Determine the velocity at time t
- (b) Determine the speed of the particle at time t
- (c) Determine the maximum speed
- (d) Determine the minimum speed

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