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**MAT 102 ASSIGNMENT**

✓ Alongerri Treasure Assignment

✓ Civil Engineering

✓ 19/ENG03/005

✓ MAT 102 Assignment

①  $x = xi + yj + zk$

$$x = bi + t^2j + t^3k$$

$$dx = i + 2tj + 3t^2k$$

$$dt$$

$$\text{At } t=1 \quad dx = i + 2j + 3k$$

$$\left| \frac{dx}{dt} \right| = \sqrt{1^2 + 2^2 + 3^2} = \sqrt{14}$$

$$T = \frac{dx/dt}{|dx/dt|} = \frac{i + 2j + 3k}{\sqrt{14}}$$

②  $A = 4t^3j + 5k, B = 2t^2i + 4tj$

$$G = A \times B = (4t^3j + 5k) \times (2t^3i + 4tj)$$

$$G = 16t^4$$

$$\Rightarrow \int_0^1 16t^4 dt$$

$$= \left| \frac{16t^5}{5} + C \right|_0^1$$

$$= \frac{16}{5}$$

$$\frac{5}{5}$$