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Course: MATH 102

Answers

$$1.) r = xi + yj + zk$$

$$r = ti + t^2j + t^3k$$

$$\frac{dr}{dt} = i + 2tj + 3t^2k$$

$$A+t=1 \quad \frac{dr}{dt} = i + 2j + 3k$$

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

$$T = \frac{dr}{dt}$$

$$\left| \frac{dr}{dt} \right| = \frac{i + 2j + 3k}{\sqrt{14}}$$

$$2.) A = 4t^3j + 5k, B = 2t^2i + 4tj$$

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

$$G = 16t^4$$

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

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

$$\Rightarrow \frac{16}{5}$$