2

$$\int_1^2 (t^2 i + t\sqrt{t-1}\,j + t\,\mathrm{sen}(\pi t)k)\,dt$$

$$i\int_1^2 t^2\,dt$$

$$j\int_1^2 t\sqrt{t-1}\,dt$$

$$k\int_1^2 t\,\mathrm{sin}(\pi t)\,dt$$

$$\int_1^2 t^2\,dt = \frac{t^3}{3}\Big|_1^2 = \frac{8}{3} - \frac{1}{3} = \frac{7}{3}$$

$$\int_1^2 t\sqrt{t-1}\,dt \qquad u = t-1$$

$$\int_1^2 t\,\mathrm{sin}(\pi t)\,dt$$

$$\frac{7}{3}i + \qquad j + 0k$$