

Name: _____

ID: _____

1. Compute

$$\int (2 \cos t \mathbf{i} + \sin t \mathbf{j} + 2t \mathbf{k}) dt.$$

2. Consider the helix

$$\mathbf{r}(t) = \cos t \mathbf{i} + \sin t \mathbf{j} + t \mathbf{k}.$$

Find

- the unit tangent vector,
- the unit normal vector,
- the binormal vector, and
- the curvature

at $t = 0$.