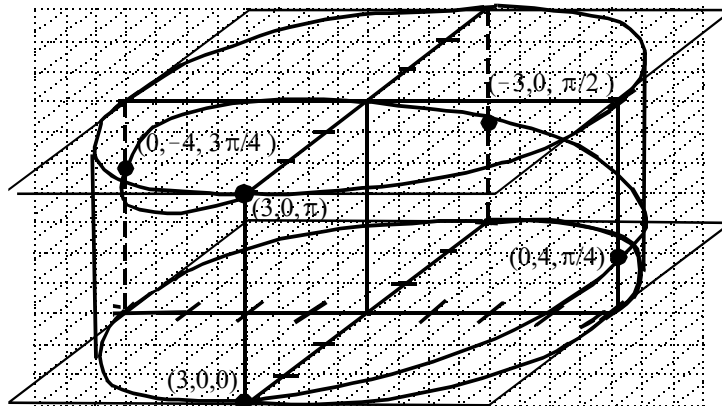


MTH 263 Practice Test #3 - Answers
 SPRING 1999

Pat Rossi

Name _____

1. ~



2. ~

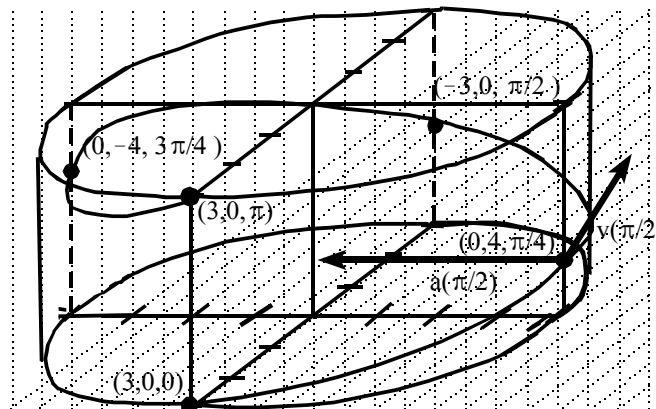
$$\mathbf{v}(t) = -3 \sin(t) \mathbf{i} + 4 \cos(t) \mathbf{j} + \frac{1}{2} \mathbf{k}$$

$$\mathbf{a}(t) = -3 \cos(t) \mathbf{i} - 4 \sin(t) \mathbf{j}$$

$$\mathbf{v}\left(\frac{\pi}{2}\right) = -3 \mathbf{i} + \frac{1}{2} \mathbf{k}$$

$$\mathbf{a}\left(\frac{\pi}{2}\right) = -4 \mathbf{j}$$

The vectors are shown below.



3. $\frac{5}{2} \mathbf{i} + \frac{65}{4} \mathbf{j} + 10 \mathbf{k}$

4. $v(t) = 4(t+1) \mathbf{i} + (3t+1) \mathbf{k}$

$$r(t) = (2t^2 + t + 2) \mathbf{i} + \left(\frac{3}{2}t^2 + t\right) \mathbf{k}$$

5. $\sqrt{569}$

6. $\mathbf{T}(t) = \cos(t)\vec{\mathbf{i}} - \sin(t)\vec{\mathbf{j}}$

$$\mathbf{T}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\vec{\mathbf{i}} - \frac{\sqrt{2}}{2}\vec{\mathbf{j}}$$

$$\mathbf{N}(t) = -\sin(t)\vec{\mathbf{i}} - \cos(t)\vec{\mathbf{j}}$$

$$\mathbf{N}\left(\frac{\pi}{4}\right) = -\frac{\sqrt{2}}{2}\vec{\mathbf{i}} - \frac{\sqrt{2}}{2}\vec{\mathbf{j}}$$

7. $\mathbf{a}_T = 0$

$$\mathbf{a}_N = 1$$

8. $\cos(x^2y) \cdot 2x + 3x^2$

9. $f_{xy} = 2 \sin(x - 2y) = f_{yx}$

10. $(-1, 1, 5)$ is a local max.

$(0, 0, 4)$ is neither a rel max nor a rel min.