MTH 236 Calculus IV Partial Answer Key Practice Questions Answers for First Exam Semester 082 (12.1 – 12.5, 13.1)

1. Defined for $t \leq 1$ and $t \neq 0$.

2. $\mathbf{i} + \frac{3}{2}\mathbf{j} + 2\mathbf{k}$

3. $x = 3(y-1)^2$

4. $\mathbf{r}(t) = \frac{t^3}{3} i + (\frac{t^2}{2} - 1)\mathbf{j} + (\frac{e^{2t}}{2} + \frac{1}{2})\mathbf{k}$

5. Smooth for $t \neq 0$ or 2π.

6.

a) Approx 2.118 sec.

b) Approx 117.4 ft.

c) Approx 58.78 ft / sec.

7.

a) <-2sin(t), -2cos(t),1>

b) $\sqrt{5}$

c) <-2cos(t),2sin(t),0>

d) $< \frac{-2}{\sqrt{5}}, 0, \frac{1}{\sqrt{5}} >$

e) <0,1,0>

f) 2/5

g) 0

h) 2

i)

j) $\mathbf{a} = 0\mathbf{T} + 2\mathbf{N}$

10. 3 + ln(2)

13. a) 2 b) ½