Students are expected to complete homework assignments on their own before referring to the following pages. The answers and hints are designed to check work and clarify problems. The original intent of the layout was for display in class after assignments had been completed. Students should use the following information as help to understand the exercises and master the concepts.

Calculus D Chapter 13

Even Answers & Hints for Homework

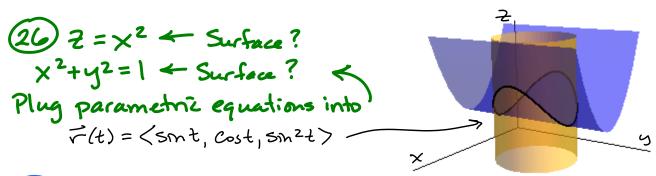
13.1 Even Answers

$$(2)\vec{r}(t) = \frac{t-2}{t+2}\hat{i} + smt \hat{j} + ln(9-t^2)\hat{k}$$

$$5t \neq -2$$

$$5q-t^2 > 0$$
Domain: $(-3,-2) \cup (-2,3)$

$$-3 < t < 3$$



36
$$\chi^2 + y^2 = 4$$
, $z = \chi y$
Use trig.: $\chi = 2\cos t$, $y = 2\sin t$
 $z = 2\cos t \ 2\sin t = 2\sin 2t$
 $z = 2\cos t \ 1 + 2\sin t \ 1 + 2\sin 2t \ 1$

(38)
$$z = 4x^2 + y^2$$
, $y = x^2$
Let $x = t \implies y = t^2$ and $z = 4t^2 + (t^2)^2$
 $\vec{r}(t) = t\hat{i} + t^2\hat{j} + (4t^2 + t^4)\hat{k}$

37 Book answer uses
$$x=t$$
 to avoid $\pm \sqrt{1}$ in answer.
my answer: $y=t \Rightarrow z=1+t$
and $x=\pm \sqrt{2^2-y^2}=\pm \sqrt{(1+t)^2-t^2}$
 $=\pm \sqrt{(1+t)^2-t^2}(1+t)$

13.2 + 13.4 Even Answers

$$(24) x = t+1, y = t, z = t$$

13.4 (18a)
$$= t^3 + (e^t - t)_{\hat{j}} + (e^{-t} + 2t)_{\hat{k}}$$

13.3 and 13.4 Even Answers

13.3 (44)
$$\mp(t) = \langle -s \text{ int cost}, cos^2t, -smt \rangle$$

 $\mp(0) = \langle 0, 1, 0 \rangle$
 $N(0) = \langle -\frac{1}{\sqrt{2}}, 0, -\frac{1}{\sqrt{2}} \rangle$

13.4 (34)
$$Q_T = \frac{4t-4}{\sqrt{4t^2-8t+5}}$$
, $Q_N = \frac{2}{\sqrt{4t^2-8t+5}}$

36)
$$Q_T = \frac{4t}{\sqrt{4t^2 + 10}}$$
, $Q_N = \frac{2\sqrt{10}}{\sqrt{4t^2 + 10}}$

(38)
$$Q_T = \frac{4 \sin 2t \cos 2t}{\sqrt{1 + 2 \sin^2 2t}}, \quad Q_N = \frac{2\sqrt{2} |\cos 2t|}{\sqrt{1 + 2 \sin^2 2t}}$$

13.3 Even Answers

(14)
$$r(s) = (\frac{2}{2}+1) \cos(\ln(\frac{1}{2}+1))$$

 $+ 23$
 $+ (\frac{1}{2}+1) \sin(\ln(\frac{1}{2}+1))$
 $t = \frac{1}{2} \ln(\frac{1}{2}+1)$