MATH 224

Selected Hints and Answers for Assignment 14

Chapter 4: 33 (old 26) ;Chapter 5: 1, 2, 3, 4, 5

33: : $\mathbf{J}(u,v) = \begin{pmatrix} \frac{u}{\sqrt{u^2+v^2}} & \frac{v}{\sqrt{u^2+v^2}} \\ \frac{-v}{u^2+v^2} & \frac{u}{u^2+v^2} \end{pmatrix}$

1: 57

(a) Composition of two functions is $x^3 + 5x^2$

(b) You may wind up computing $(8,9) \cdot (6,1)$

2: $\frac{1}{2}$

One computation is $\begin{pmatrix} 1 \\ e^4 \end{pmatrix} (12,4)$.

3: $\begin{pmatrix} 12 & 4 \\ 12e^4 & 4e^4 \end{pmatrix}$

4: $\begin{pmatrix} 1 & 1 \\ 3 & 3 \\ 1/4 & 1/4 \end{pmatrix}$

$(x+y, (x+y)^{3/2}, \sqrt{x+y})$ plays a role as does $\begin{pmatrix} 4 \\ 12 \\ 1/4 \end{pmatrix} (\frac{1}{4}\ \frac{1}{4})$

5: $\begin{pmatrix} 18 & 0 \\ 120 & -328 \end{pmatrix}$

$(3x^2.2x^4 - x^2y^2 - 4y^3)$ plays a role as does $\begin{pmatrix} 1 & 1 \\ 34 & -7 \end{pmatrix} \begin{pmatrix} 6 & -8 \\ 12 & 8 \end{pmatrix}$