MATH 6171   Answers for Homework 2   Fall 2005
For even-numbered problems in Chapters 8 & 9 which you have turned in only

Section 8.1

4 $-10, 2, -6; \sqrt{140}$.

14 $(3, -1, 6); \sqrt{46}$.

18 $\sqrt{11}, \sqrt{14} + 3$.

20 $(1/\sqrt{14})[3, -2, 1], [0, 1, 0]$.

22 $[27, -19, 2]$.

Section 8.2

4 -16.

Section 8.4

4 Circles.

18 Note that each field vector equals the position vector of the corresponding point.

30 $\left[\dfrac{x}{x^2 + y^2}, \dfrac{-y}{x^2 + y^2} \right], \left[\dfrac{y}{x^2 + y^2}, \dfrac{x}{x^2 + y^2} \right]$.

Section 8.5

10 Helix on an elliptical cylinder.

28 $2\pi\sqrt{a^2 + c^2}$.

Section 8.8

4 $(1 - t - \sin t)\sin t + (1 + t + \cos t)\cos t$.

8 $4u^3(v^4 - 4 + v^{-4}), 4u^4(v^3 + v^{-5})$.

10 $3x^2 + 2(x^2 + y^2)2x, 3y^2 + 2(x^2 + y^2)2y$.

Section 8.9

2 $[y, x], [1, 1]$.

4 $[2x, 18y], [-4, 36]$.

18 $(a^2 + b^2 + c^2)^{-1/2}[a, b, c]$.

28 (It is a proof.)

Section 8.10

8 $6xyz$.

16 0.

Section 8.11

4 0.

14 (It is a proof.)

20 $-x - y - z, [x - z, y - x, z - y]$.

Section 9.1

2 $6/5$.

10 $\sinh 2 + \cosh 4 + e^8 - 2 \approx 3010$.

Section 9.2

2 1.

6 16.

12 Dependent.

18 Dependent.

20 Independent, $c \cosh b - a^2$.

Section 9.4

10 $\frac{1}{4}(1 - e^{-2})$.

12 $3\pi a^2$.

14 $e^2 + 2e - 3 \approx 9.83$.

Section 9.6

6 $17h/64$.

24 (It is a proof.)

Section 9.7

4 $486\pi \approx 1527$.

14 $24\sinh 1$.

Section 9.9

10 $-9\sqrt{2}\pi$.