MATH 232 NAME:
15.8

Partial solutions for 1 2 3 4 17 19 20 21 24 25 35

1. $(3/2, 3\sqrt{3}/2, 3\sqrt{3})$, $(0, 3\sqrt{2}/2, -3\sqrt{2}/2)$

2. $(0, 2, 0)$, $(\sqrt{6}, -\sqrt{6}, 2)$

3. Spherical: $(2, 3\pi/2, \pi/2)$, $(2, 3\pi/4, 3\pi/4)$

4. Spherical: $(2, 0, \pi/6)$, $(4, 11\pi/6, \pi/6)$

17. $\int_0^{\pi/6} \int_0^{\pi/2} \int_0^3 \rho^2 \sin\phi \; d\rho \; d\theta \; d\phi = \frac{9\pi}{4}(2 - \sqrt{3})$

19. $\int_0^{\pi/2} \int_0^3 \int_0^2 f(r\cos\theta, r\sin\theta, z) \; r \; dz \; dr \; d\theta$

20. $\int_0^{\pi/2} \int_{\pi/2}^{2\pi} \int_1^2 f(\rho\sin\phi\cos\theta, \rho\sin\phi\sin\theta, \rho\cos\phi)\rho^2 \sin\phi \; d\rho \; d\theta \; d\phi$

21. $\int_0^{\pi} \int_0^{2\pi} \int_0^5 (\rho^2)^2 \rho^2 \sin\phi \; d\rho \; d\theta \; d\phi = 312500\pi/7$

24. $\int_0^{\pi} \int_0^{\pi} \int_0^3 (\rho\sin\phi\sin\theta)^2 \rho^2 \sin\phi \; d\rho \; d\theta \; d\phi = 162\pi/5$

25. $\int_0^{\pi/2} \int_0^{\pi/2} \int_0^1 (\rho\sin\phi\cos\theta) e^{\rho^2} \rho^2 \sin\phi \; d\rho \; d\theta \; d\phi = \pi/8$

35. $V = \int_0^{2\pi} \int_0^{\pi/4} \int_0^1 \rho^2 \sin\phi \; d\rho \; d\phi \; d\theta = \frac{1}{3}\pi(2 - \sqrt{2})$