

## Answers to Test 3, 1992

- (a)  $-1/12$   
(b)  $4$   
(c)  $(e - 1)/3$
- Divergence:  $0$   
Curl:  $\langle 1, 1, 1 \rangle$
- $(r, \theta, z) = (2, 11\pi/6, -2)$   
 $(\rho, \phi, \theta) = (2\sqrt{2}, 3\pi/4, 11\pi/6)$  (note the order of the angles here)
- $2^{5/2}\pi/20 = \pi\sqrt{2}/5$
- $\int_0^{\pi/3} \int_0^{2\pi} \int_0^2 \rho^2 \sin \phi \, d\rho \, d\theta \, d\phi$
- $\pi/2$