

Quiz 3

Your Name (please PRINT): _____

Student ID Number: _____

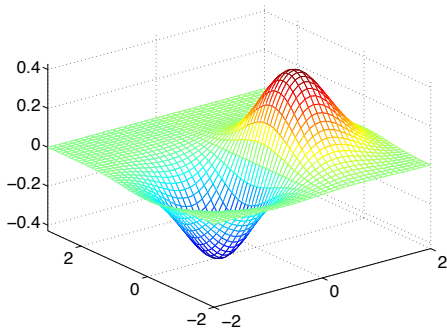
1. The position function of a moving particle is $\mathbf{r}(t) = e^t \hat{\mathbf{i}} + t \hat{\mathbf{j}} - \sqrt{t} \hat{\mathbf{k}}$. Find its velocity and acceleration at $t = 1$.

2. Determine whether the limit exists. If it does, find the limit.

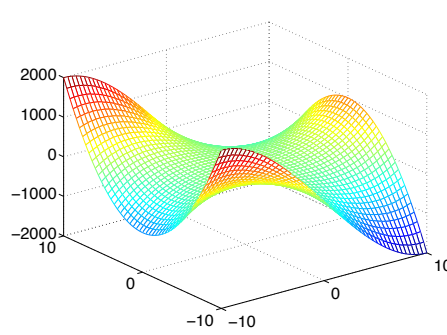
$$\lim_{(x,y) \rightarrow (0,0)} \frac{2xy}{x^2 + y^2}$$

3. Match each of the given functions with its graph and level curves. Give reasons for your choices.

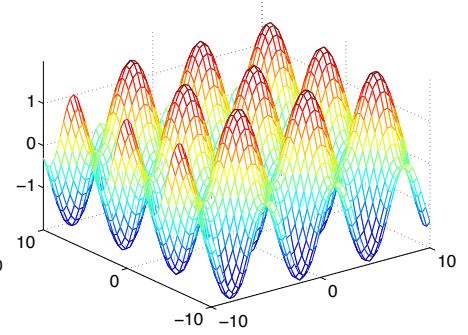
$$f(x, y) = xe^{-x^2-y^2}, \quad g(x, y) = x^3 - 3xy^2, \quad h(x, y) = \sin x + \cos y$$



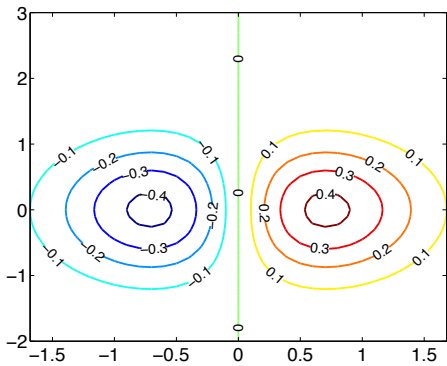
(a)



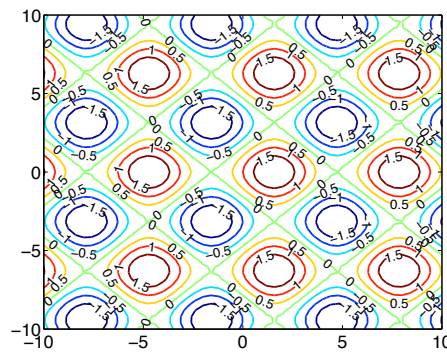
(b)



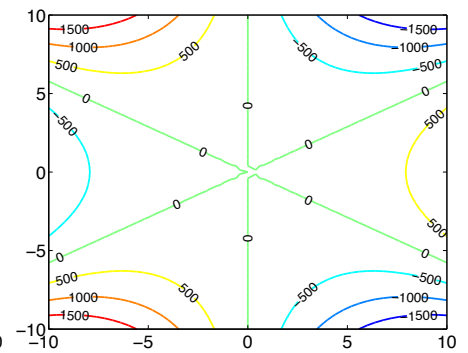
(c)



(d)



(e)



(f)