Arts & Science 1D06 Quiz #12 SOLUTIONS   1 April 2016
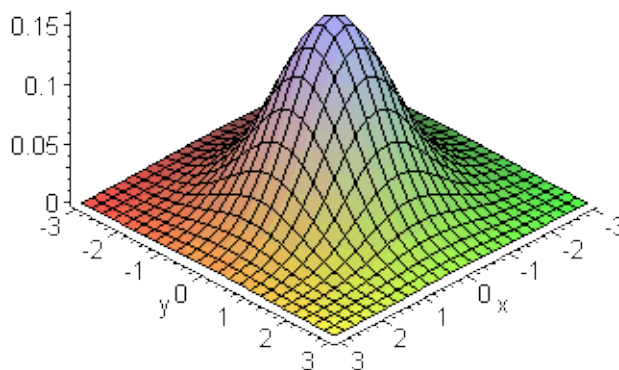
Full Name:_____   Student # :_____

TA:_____

Please provide detailed solutions to the problems below. Correct responses without justification may not receive full credit. The use of a calculator is permitted.

[5 marks]   (1) Which of these functions is pictured above, and how do you know?

$$(i)\ z = xy \qquad (ii)\ z = x^2 - y^2 \qquad (iii)\ \mathbf{z = e^{-x^2 - y^2}} \qquad (iv)\ z = -\frac{y}{x}.$$

Some reasons: it's the only one which is non-zero and defined at $(x, y) = (0, 0)$, the only one which has circular level sets, and the only one which is symmetric in both x and y.

[5 marks]   (2) Pick one of the other functions on the list and plot its level sets.

Here they are, in order (i), (ii), (iv):