MATE 3063 assignment 7: set 14.6

Not to hand in: exercises 1–6 of this section.

66. Exercise 18.

67. Find the directional derivative of the given function at the given point in the given direction:

(a) $f(x,y) = e^x \sin y - y/x$, $(1, \pi/4)$, $\langle -3,2 \rangle$.

(b) $f(x,y,z) = \ln(2x + y - z)$, $(2, 0, 1)$, $\langle 1, 1, 1 \rangle$.

(c) $f(x,y,z) = \dfrac{x}{y+z}$, $(1, 2, 1)$, $\langle 1, 2, 1 \rangle$.

68. Find the maximum rate of change and the direction where it occurs for each of the functions $\sin(xy)$, $y \ln x$ at the point $(1, 0)$.

69(a-b). Exercises 28, 29.

70-71. Problems 35, 38.

72-73. Choose two of 41–46.

74-75. Problems 50, 59.

76. Choose one of 61, 62, 63. Problem 63: the tangent line is the intersection of the tangent planes to each surface. It is also the line, passing through the given point, perpendicular to the normal vectors to each surface.