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Pg. 554 #1-5 odd, 9-11 odd

Find $\frac{\partial z}{\partial x}, \frac{\partial z}{\partial y}, \left.\frac{\partial z}{\partial x}\right|_{(-2,-3)}$, and $\left.\frac{\partial z}{\partial y}\right|_{(0,-5)}$.

1. $z = 2x - 3y$

$$\frac{\partial z}{\partial x} = 2 \tag{1}$$
$$\frac{\partial z}{\partial y} = -3 \tag{2}$$
$$\left.\frac{\partial z}{\partial x}\right|_{(-2,-3)} = 2 \tag{3}$$
$$\left.\frac{\partial z}{\partial y}\right|_{(0,-5)} = -3 \tag{4}$$

3. $z = 3x^2 - 2xy + y$

$$\frac{\partial z}{\partial x} = 6x - 2y \tag{5}$$
$$\frac{\partial z}{\partial y} = -2x + 1 \tag{6}$$
$$\left.\frac{\partial z}{\partial x}\right|_{(-2,-3)} = 6(-2) - 2(-3) = -6 \tag{7}$$
$$\left.\frac{\partial z}{\partial y}\right|_{(0,-5)} = -2(0) + 1 = 1 \tag{8}$$

Find $f_x, f_y, f_x(-2, 4)$ and $f_y(4, -3)$.

5. $f(x, y) = 2x - 5xy$

$$f_x = 2 - 5y \tag{9}$$
$$f_y = -5x \tag{10}$$
$$f_x(-2, 4) = 2 - 5(4) = -18 \tag{11}$$
$$f_y(4, -3) = -5(4) = -20 \tag{12}$$

Find f_x and f_y

9. $f(x, y) = e^{2x-y}$

$$f_x = 2e^{2x-y} \tag{13}$$
$$f_y = -e^{2x-y} \tag{14}$$

11. $f(x, y) = e^{xy}$

$$f_x = ye^{xy} \tag{15}$$
$$f_y = xe^{xy} \tag{16}$$