

99 Elyas Sanzar

$$1.) \quad \frac{df}{dx} = 2x + 2y^2 \quad \frac{df}{dy} = 4xy + 6y^2$$

$$\frac{dx}{dr} = 1 \quad \frac{dy}{dr} = 3 \quad \frac{dx}{ds} = 2 \quad \frac{dy}{ds} = 2$$

$$\frac{df}{dr} = (2x + 2y^2) \cdot 1 + (4xy + 6y^2) \cdot 3$$

$$\frac{df}{ds} = (2x + 2y^2) \cdot 2 + (4xy + 6y^2) \cdot 2$$

$$2.) \quad \frac{dz}{dx} = 2x - 5(x(\frac{dz}{dx} \cdot y) + yz) + 2z$$

$$\frac{dz}{dx} = 2y - 5(y(x \frac{dz}{dy} + xz)) + 2z$$

$$\frac{dz}{dx} \rightarrow -2y + 5xz = -5xz \frac{dz}{dy} + 2z \frac{dz}{dy}$$

$$\frac{dz}{dx} = \frac{-2x + 5y^2}{-5xy + 2z}$$

$$\frac{dz}{dy} = \frac{-2y + 5x^2}{-5yx + 2z}$$