

Subject: Session 43

Year. Month. Date. ()

$$1. \left(\frac{\partial w}{\partial u} \right)_v = 3u^2 - v^2 - 2u \cdot v \cdot \left(\frac{\partial v}{\partial u} \right)_v \\ = 3u^2 - v^2 - 2u \cdot v$$

$$\left(\frac{\partial w}{\partial v} \right)_u = 0 - u \cdot 2v \cdot \left(\frac{\partial v}{\partial v} \right)_u = -2uv$$

$$2. dw = (3u^2 - v^2)du - 2uv dv$$

$$du = x dy + y dx$$

$$dv = du + dv$$

$$\Rightarrow dw = (3u^2 - v^2)du - 2uv(du + dv)$$

$$= (3u^2 - v^2 - 2uv)du - 2uv dv$$

$$\Rightarrow \left(\frac{dw}{dv} \right)_u = -2uv$$

$$\left(\frac{dw}{du} \right)_v = 3u^2 - v^2 - 2uv$$