EE 503

lecture #19

3-9-2014

2D → 2D

2 RVs → 2 RVs

See example 5.44 p. 275

of LG3 ⇒ rectangular ⇒ polar transformation

2 RVs $\Rightarrow$ 2 RVs

Jointly Normal RVs Sect 5.9

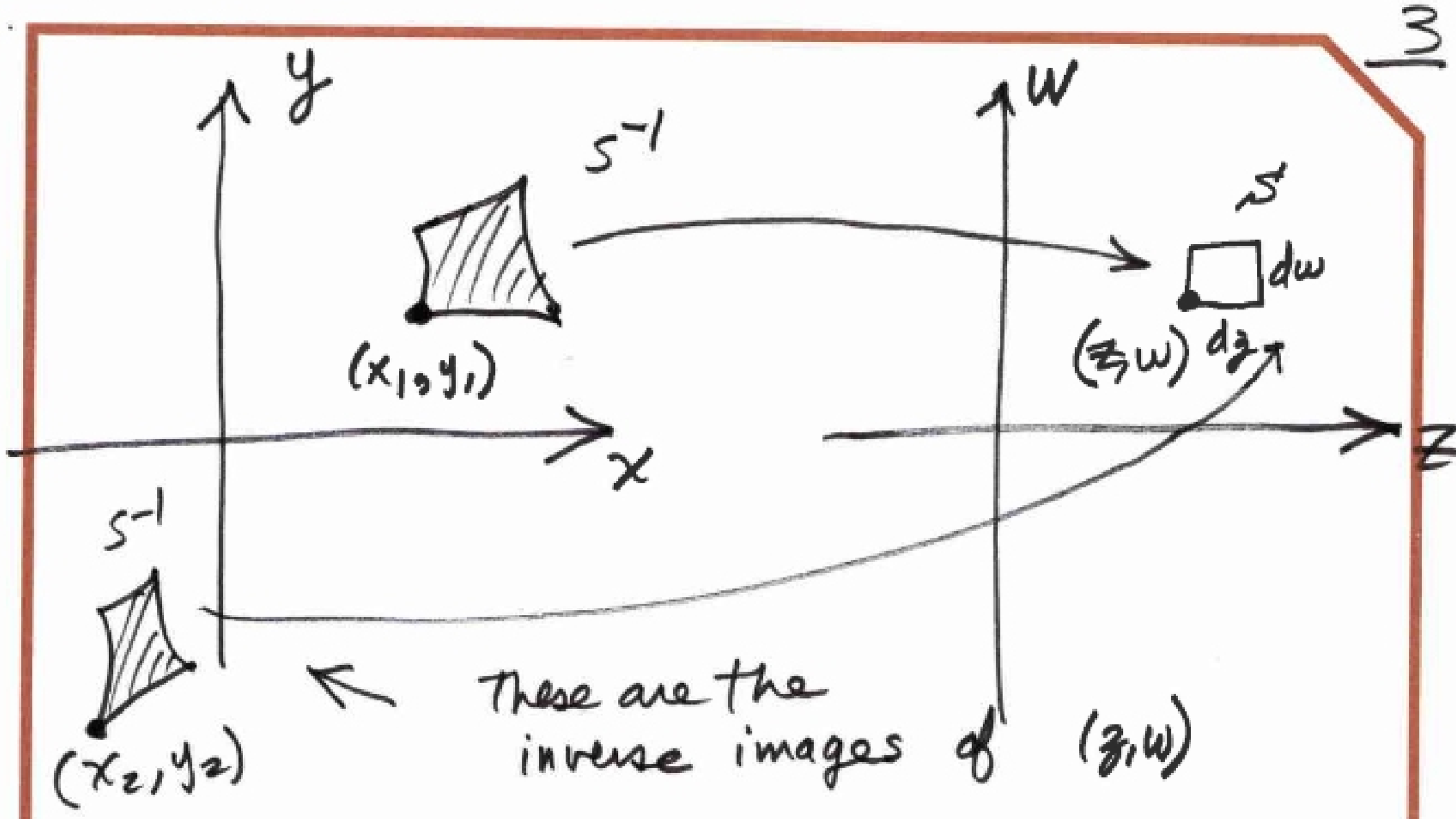
pp. 278 →

Transform Methods and Characteristic Functions L-G 3 sect. 4.7

Direct Transformation 2 RVs $\Rightarrow$ 2 RVs

$$(z, w) = \underline{G}(x, y) \quad \text{(pair of equations)}$$

$$(x, y) = \underline{G}^{-1}(z, w) \quad \text{(pair of inverse functions)}$$



S is some region in (z, w) coordinates —
suppose it is a square

$$P((Z,W) \in S) = \iint_S f_{ZW}(z,w)\,dz\,dw = \iint_{S^{-1}} f_{XY}(x,y)\,dx\,dy$$

$(x, y) \in S^{-1}$

S

$$\{z \le Z \le z + dz,\ w \le W \le w + dw\} =$$

$$\{(Z,W) \in S\} = \{(X,Y) \in S^{-1}\}$$