

**Solution to Problem 6)**

$$\ln(x_1x_2) = \int_1^{x_1} y^{-1}dy + \int_{x_1}^{x_1x_2} y^{-1}dy = \ln(x_1) + \int_1^{x_2} \eta^{-1}d\eta = \ln(x_1) + \ln(x_2).$$

↑  
Change of variable:  $y = x_1\eta$

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