

**Answers to selected exercises from Colley, Section 2.8**

**28.** We begin by finding the partial derivatives of the function  $u(x, y) = (x + y)/xy$ :

$$\frac{\partial u}{\partial x} = \frac{-y^2}{x^2 y^2}, \quad \frac{\partial u}{\partial y} = \frac{x^2}{x^2 y^2}$$

Now  $w = f(u)$ , so by the Chain Rule we have

$$x^2 w_x - y^2 w_y = x^2 u_x f' - y^2 u_y f'$$

and if we substitute the previously derived expressions for  $u_x$  and  $u_y$  we obtain something that simplifies to 0.