$$z = \sqrt{x-y} + \ln \sqrt{xy}$$

$$-\frac{1}{2}(x-y)^{-\frac{1}{2}} + \frac{1}{\sqrt{xy}} \cdot \frac{1}{2}(xy)^{-\frac{1}{2}} \cdot x$$

$$-\frac{1}{2\sqrt{x-y}} + \frac{x}{2\sqrt{xy}\cdot\sqrt{x}\sqrt{y}}$$

$$-\frac{1}{2\sqrt{x-y}} + \frac{1}{2y}$$

$$dz = \left(\frac{1}{2\sqrt{x-y}} + \frac{1}{2x}\right)dx + \left(-\frac{1}{2\sqrt{x-y}} + \frac{1}{2y}\right)dy$$

$$dz \left(\frac{1}{2\sqrt{x-y}} + \frac{1}{2x}\right)dx - \left(\frac{1}{2\sqrt{x-y}} - \frac{1}{2y}\right)dy$$