

$$\begin{aligned}
 a) \quad s &= x \cdot x + \bar{y} \\
 s &= x \cdot \bar{x} \cdot y \\
 s &= 0 \cdot y \\
 s &= 0
 \end{aligned}$$

$$\begin{aligned}
 b) \quad (x+y) + (y \cdot \bar{x}) \\
 s &= y(x+1+\bar{x}) \\
 s &= y(1+\bar{x}) \\
 s &= y \cdot 1 \\
 s &= y
 \end{aligned}$$

$$\begin{aligned}
 c) \quad s &= (\bar{x} \cdot y) \cdot (\bar{y} + x) \\
 s &= (\bar{x} + \bar{y}) \cdot (\bar{y} + x) \\
 s &= \bar{y}(\bar{x} + x) \\
 s &= \bar{y} \cdot 1 \\
 s &= \bar{y}
 \end{aligned}$$

$$\begin{aligned}
 d) \quad s &= (\bar{x} \cdot \bar{y}) + (\bar{y} + \bar{x}) \\
 s &= (x+y) + (\bar{y} + \bar{x}) \\
 s &= (\bar{y} + y) + (x + \bar{x}) \\
 s &= 1 + 1 \\
 s &= 1
 \end{aligned}$$

$$\begin{aligned}
 e) \quad s &= (x+y) \cdot (\bar{x} + \bar{y}) \\
 s &= (x+y) + (\bar{x} + \bar{y}) \\
 s &= (x + \bar{x}) + (y + \bar{y}) \\
 s &= (\bar{x} + x) \cdot (\bar{y} + y) \\
 s &= 1 \cdot 1 \\
 s &= 1
 \end{aligned}$$