

2.

$$\begin{aligned}
 (a) \quad & ((x+w)y + wyz + x'z(x+y))' \\
 &= [(x+w)y]' \cdot (wyz)' \cdot [x'z(x+y)]' \\
 &= (xw' + y') \cdot (w' + y' + z') \cdot [(x+z') + x'y']
 \end{aligned}$$

$$\begin{aligned}
 (c) \quad & (x(y + y'(z+w)))' \\
 &= x' + (y + y'(z+w))' \\
 &= x' + [y' \cdot (y+z') \cdot (y+w')] \\
 &= x' + y'z'w'
 \end{aligned}$$

$$\begin{aligned}
 (b) \quad & (x(y' + z) + y'z(x+w))' \\
 &= [x(y' + z)]' \cdot [y'z(x+w)]' \\
 &= (x' + yz') \cdot [(y+z') + x'w']
 \end{aligned}$$

$$\begin{aligned}
 (d) \quad & (xy' + y(x+z))' \\
 &= (x' + y) \cdot (x' + y') \cdot (y' + z')
 \end{aligned}$$