

$$4. (a) [(WX' + Y) [(W+Z)' + (XYZ')]]'$$

$$= (WX' + Y)' + [(W+Z)' + (XYZ')]'$$

$$= (WX')' \cdot Y' + [(W+Z)']' \cdot (XYZ')'$$

$$= (W' + X)Y' + [(W+Z)(X' + Y' + Z)]$$

$$(b) [X + YZ(W + X')]'$$

$$= X' \cdot [Y' + Z' + (W + X')']$$

$$= X' (Y' + Z' + XW')$$