1. $\frac{(secx-tanx)^2+1}{cscx(secx-tanx)} = 2tanx,$

$$secx = \frac{1}{cosx},\ cscx = \frac{1}{sinx},\ tanx = \frac{sinx}{cosx},\ cos^2x + sin^2x = 1$$

$$\frac{(secx-tanx)^2+1}{cscx(secx-tanx)} = \frac{\left(\frac{1}{cosx}-\frac{sinx}{cosx}\right)^2+1}{\frac{1}{sinx}\left(\frac{1}{cosx}-\frac{sinx}{cosx}\right)} = \frac{\frac{1}{cos^2x}((1-sinx)^2+cos^2x)}{\frac{1}{sinx}\left(\frac{1}{cosx}-\frac{sinx}{cosx}\right)} =$$

$$= \frac{\frac{sinx}{cos^2x}((1-sinx)^2+cos^2x)}{\frac{1}{cosx}(1-sinx)} = \frac{\frac{sinxcosx}{cos^2x}((1-sinx)^2+cos^2x)}{(1-sinx)} =$$

$$\frac{\frac{sinx}{cosx}((1-sinx)^2+cos^2x)}{(1-sinx)} = \frac{\frac{sinx}{cosx}(1-2sinx+sin^2x+cos^2x)}{(1-sinx)} =$$

$$= \frac{\frac{sinx}{cosx}(1-2sinx+1)}{(1-sinx)} = \frac{\frac{2sinx}{cosx}(1-sinx)}{(1-sinx)} = \frac{2sinx}{cosx} = 2tanx.$$

2. $\frac{1+cosx+sinx}{1+cosx-sinx} = secx + tanx$

$$\frac{1+cosx+sinx}{1+cosx-sinx} = \frac{1+cosx+sinx}{1+cosx-sinx} \times \frac{1+cosx-sinx}{1+cosx-sinx} =$$

$$= \frac{1+cosx-sinx+cosx+cos^2x-sinxcosx+sinx+sinxcosx-sin^2x}{1+cosx-sinx+cosx+cos^2x-sinxcosx-sinx-sinxcosx+sin^2x} =$$

$$= \frac{1+2cosx+cos^2x-sin^2x}{1+2cosx-2sinx-2sinxcosx+1} = \frac{cos^2x+sin^2x+2cosx+cos^2x-sin^2x}{2+2cosx-2sinx-2sinxcosx} =$$

$$= \frac{2cos^2x+2cosx}{2((1+cosx)-sinx(1+cosx))} =$$

$$= \frac{2cosx(cosx+1)}{2(1+cosx)(1-sinx)} = \frac{cosx}{1-sinx} \times \frac{1+sinx}{1+sinx} = \frac{cosx(1+sinx)}{1-sin^2x} = \frac{cosx(1+sinx)}{cos^2x} =$$

$$= \frac{1+sinx}{cosx} = \frac{1}{cosx} + \frac{sinx}{cosx} = secx + tanx.$$