53. $\dfrac{\operatorname{sen}\alpha+\cos\alpha}{\cos\alpha}-\dfrac{\operatorname{sen}\alpha-\cos\alpha}{\operatorname{sen}\alpha}=\sec\alpha\cdot\operatorname{cosec}\alpha$

$$\frac{\operatorname{sen}\alpha+\cos\alpha}{\cos\alpha}-\frac{\operatorname{sen}\alpha-\cos\alpha}{\operatorname{sen}\alpha}=\frac{\operatorname{sen}\alpha(\operatorname{sen}\alpha+\cos\alpha)-\cos\alpha(\operatorname{sen}\alpha-\cos\alpha)}{\cos\alpha\operatorname{sen}\alpha}$$

$$=\frac{\operatorname{sen}^2\alpha+\cancel{\operatorname{sen}\alpha\cos\alpha}-\cancel{\operatorname{sen}\alpha\cos\alpha}+\cos^2\alpha}{\cos\alpha\cdot\operatorname{sen}\alpha}=\frac{1}{\cos\alpha\operatorname{sen}\alpha}=\sec\alpha\operatorname{cosec}\alpha$$

54. $\dfrac{\cos^2\alpha-\operatorname{sen}^2\alpha}{1-\operatorname{tg}^2\alpha}=\cos^2\alpha$

$$\frac{\cos^2\alpha-\operatorname{sen}^2\alpha}{1-\operatorname{tg}^2\alpha}=\frac{\cos^2\alpha-\operatorname{sen}^2\alpha}{1-\frac{\operatorname{sen}^2\alpha}{\cos^2\alpha}}=\frac{\cos^2\alpha-\operatorname{sen}^2\alpha}{\frac{\cos^2\alpha-\operatorname{sen}^2\alpha}{\cos^2\alpha}}=$$

$$=\frac{\cos^2\alpha(\cancel{\cos^2\alpha-\operatorname{sen}^2\alpha})}{\cancel{\cos^2\alpha-\operatorname{sen}^2\alpha}}=\cos^2\alpha$$

55. $\dfrac{\cos\alpha+\operatorname{sen}\alpha-\operatorname{sen}^3\alpha}{\operatorname{sen}\alpha}=\operatorname{cotg}\alpha+\cos^2\alpha$

$$\frac{\cos\alpha+\operatorname{sen}\alpha-\operatorname{sen}^3\alpha}{\operatorname{sen}\alpha}=\frac{\cos\alpha+\operatorname{sen}\alpha(\overbrace{1-\operatorname{sen}^2\alpha}^{\cos^2\alpha})}{\operatorname{sen}\alpha}=$$

$$=\frac{\cos\alpha}{\operatorname{sen}\alpha}+\frac{\cancel{\operatorname{sen}\alpha}\cdot\cos^2\alpha}{\cancel{\operatorname{sen}\alpha}}=\operatorname{cotg}\alpha+\cos^2\alpha$$

59. $\dfrac{(2\cos^2\alpha-1)^2}{\cos^4\alpha-\operatorname{sen}^4\alpha}=1-2\operatorname{sen}^2\alpha$

$$\frac{[2\cos^2\alpha-(\cancel{\operatorname{sen}^2\alpha}+\cos^2\alpha)]^2}{(\cos^2\alpha+\operatorname{sen}^2\alpha)(\cos^2\alpha-\operatorname{sen}^2\alpha)}=\frac{(2\cos^2\alpha-\operatorname{sen}^2\alpha-\cos^2\alpha)^2}{\cos^2\alpha-\operatorname{sen}^2\alpha}=$$

$$=\frac{(\cos^2\alpha-\operatorname{sen}^2\alpha)^2}{\cancel{\cos^2\alpha-\operatorname{sen}^2\alpha}}=1-\operatorname{sen}^2\alpha-\operatorname{sen}^2\alpha=1-2\operatorname{sen}^2\alpha$$