Trigonometric Identities

Prove each of the following identities:

a) $\tan A + \cot A = \sec A \cdot \csc A$

b) $\cot^2 a = \cos^2 a + (\cot a \cdot \cos a)^2$

c) $\dfrac{1}{sec^2\theta} = sin^2\theta \cdot cos^2\theta + cos^4\theta$

d) $\cot \theta \cdot \sec \theta = \csc \theta$

e) $sec^2\theta + csc^2\theta = \dfrac{1}{sin^2\theta \cdot cos^2\theta}$

f) $\dfrac{1+tan^2\theta}{1+cot^2\theta} = tan^2\theta$

g) $\dfrac{sec^2\alpha - cos^2\alpha}{tan^2\alpha} = 1 + cos^2\alpha$

h) $\sin A \cdot \cos A \cdot \tan A = 1 - \cos^2 A$

i) $\dfrac{csc^2\rho - sin^2\rho}{csc^2\rho \cdot (2 - cos^2\rho)} = cos^2\rho$

j) $(1 + \tan^2 x)(1 - \cos^2 x) = \tan^2 x$