

49. $\frac{1 - \sin \theta}{\cos \theta} + \frac{\cos \theta}{1 - \sin \theta} = 2 \sec \theta$ 50. $\frac{\cos \theta}{1 + \sin \theta} + \frac{1 + \sin \theta}{\cos \theta} = 2 \sec \theta$ 51. $\frac{\sin \theta}{\sin \theta - \cos \theta} = \frac{1}{1 - \cot \theta}$
52. $1 - \frac{\sin^2 \theta}{1 + \cos \theta} = \cos \theta$ 53. $\frac{1 - \sin \theta}{1 + \sin \theta} = (\sec \theta - \tan \theta)^2$ 54. $\frac{1 - \cos \theta}{1 + \cos \theta} = (\csc \theta - \cot \theta)^2$
55. $\frac{\cos \theta}{1 - \tan \theta} + \frac{\sin \theta}{1 - \cot \theta} = \sin \theta + \cos \theta$ 56. $\frac{\cot \theta}{1 - \tan \theta} + \frac{\tan \theta}{1 - \cot \theta} = 1 + \tan \theta + \cot \theta$
57. $\tan \theta + \frac{\cos \theta}{1 + \sin \theta} = \sec \theta$ 58. $\frac{\sin \theta \cos \theta}{\cos^2 \theta - \sin^2 \theta} = \frac{\tan \theta}{1 - \tan^2 \theta}$ 59. $\frac{\tan \theta + \sec \theta - 1}{\tan \theta - \sec \theta + 1} = \tan \theta + \sec \theta$
60. $\frac{\sin \theta - \cos \theta + 1}{\sin \theta + \cos \theta - 1} = \frac{\sin \theta + 1}{\cos \theta}$ 61. $\frac{\tan \theta - \cot \theta}{\tan \theta + \cot \theta} = \sin^2 \theta - \cos^2 \theta$ 62. $\frac{\sec \theta - \cos \theta}{\sec \theta + \cos \theta} = \frac{\sin^2 \theta}{1 + \cos^2 \theta}$
63. $\frac{\tan \theta - \cot \theta}{\tan \theta + \cot \theta} + 1 = 2 \sin^2 \theta$ 64. $\frac{\tan \theta - \cot \theta}{\tan \theta + \cot \theta} + 2 \cos^2 \theta = 1$ 65. $\frac{\sec \theta + \tan \theta}{\cot \theta + \cos \theta} = \tan \theta \sec \theta$
66. $\frac{\sec \theta}{1 + \sec \theta} = \frac{1 - \cos \theta}{\sin^2 \theta}$ 67. $\frac{1 - \tan^2 \theta}{1 + \tan^2 \theta} + 1 = 2 \cos^2 \theta$ 68. $\frac{1 - \cot^2 \theta}{1 + \cot^2 \theta} + 2 \cos^2 \theta = 1$
69. $\frac{\sec \theta + \csc \theta}{\sec \theta \csc \theta} = \sin \theta - \cos \theta$ 70. $\frac{\sin^2 \theta - \tan \theta}{\cos^2 \theta - \cot \theta} = \tan^2 \theta$ 71. $\sec \theta - \cos \theta = \sin \theta \tan \theta$
72. $\tan \theta + \cot \theta = \sec \theta \csc \theta$ 73. $\frac{1}{1 - \sin \theta} + \frac{1}{1 + \sin \theta} = 2 \sec^2 \theta$
74. $\frac{1 + \sin \theta}{1 - \sin \theta} - \frac{1 - \sin \theta}{1 + \sin \theta} = 4 \tan \theta \sec \theta$ 75. $\frac{\sec \theta}{1 - \sin \theta} = \frac{1 + \sin \theta}{\cos^3 \theta}$
76. $\frac{1 - \sin \theta}{1 + \sin \theta} = (\sec \theta - \tan \theta)^2$ 77. $\frac{(\sec \theta - \tan \theta)^2 + 1}{\csc \theta (\sec \theta - \tan \theta)} = 2 \tan \theta$
78. $\frac{\sec^2 \theta - \tan^2 \theta + \tan \theta}{\sec \theta} = \sin \theta + \cos \theta$ 79. $\frac{\sin \theta + \cos \theta}{\cos \theta} - \frac{\sin \theta - \cos \theta}{\sin \theta} = \sec \theta \csc \theta$
80. $\frac{\sin \theta + \cos \theta}{\sin \theta} - \frac{\cos \theta - \sin \theta}{\cos \theta} = \sec \theta \csc \theta$ 81. $\frac{\sin^3 \theta + \cos^3 \theta}{\sin \theta + \cos \theta} = 1 - \sin \theta \cos \theta$
82. $\frac{\sin^3 \theta + \cos^3 \theta}{1 - 2 \cos^2 \theta} = \frac{\sec \theta - \sin \theta}{\tan \theta - 1}$ 83. $\frac{\cos^2 \theta - \sin^2 \theta}{1 - \tan^2 \theta} = \cos^2 \theta$
84. $\frac{\cos \theta + \sin \theta - \sin^3 \theta}{\sin \theta} = \cot \theta + \cos^2 \theta$ 85. $\frac{(2 \cos^2 \theta - 1)^2}{\cos^4 \theta - \sin^4 \theta} = 1 - 2 \sin^2 \theta$
86. $\frac{1 - 2 \cos^2 \theta}{\sin \theta \cos \theta} = \tan \theta - \cot \theta$ 87. $\frac{1 + \sin \theta + \cos \theta}{1 + \sin \theta - \cos \theta} = \frac{1 + \cos \theta}{\sin \theta}$
88. $\frac{1 + \cos \theta + \sin \theta}{1 + \cos \theta - \sin \theta} = \sec \theta + \tan \theta$ 89. $(a \sin \theta + b \cos \theta)^2 + (a \cos \theta - b \sin \theta)^2 = a^2 + b^2$
90. $(2a \sin \theta \cos \theta)^2 + a^2(\cos^2 \theta - \sin^2 \theta)^2 = a^2$ 91. $\frac{\tan \alpha + \tan \beta}{\cot \alpha + \cot \beta} = \tan \alpha \tan \beta$
92. $(\tan \alpha + \tan \beta)(1 - \cot \alpha \cot \beta) + (\cot \alpha + \cot \beta)(1 - \tan \alpha \tan \beta) = 0$
93. $(\sin \alpha + \cos \beta)^2 + (\cos \beta + \sin \alpha)(\cos \beta - \sin \alpha) = 2 \cos \beta(\sin \alpha + \cos \beta)$
94. $(\sin \alpha - \cos \beta)^2 + (\cos \beta + \sin \alpha)(\cos \beta - \sin \alpha) = -2 \cos \beta(\sin \alpha - \cos \beta)$
95. $\ln|\sec \theta| = -\ln|\cos \theta|$ 96. $\ln|\tan \theta| = \ln|\sin \theta| - \ln|\cos \theta|$
97. $\ln|1 + \cos \theta| + \ln|1 - \cos \theta| = 2 \ln|\sin \theta|$ 98. $\ln|\sec \theta + \tan \theta| + \ln|\sec \theta - \tan \theta| = 0$
99. Show that $\sec(\tan^{-1} v) = \sqrt{1 + v^2}$.
100. Show that $\tan(\sin^{-1} v) = \frac{v}{\sqrt{1 - v^2}}$.
101. Show that $\tan(\cos^{-1} v) = \frac{\sqrt{1 - v^2}}{v}$.
102. Show that $\sin(\cos^{-1} v) = \sqrt{1 - v^2}$.
103. Show that $\cos(\sin^{-1} v) = \sqrt{1 - v^2}$.
104. Show that $\cos(\tan^{-1} v) = \frac{1}{\sqrt{1 + v^2}}$.