



# BEYOND EXCELLENCE -31

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1) Show that each of the following functions,

$$(a^2 - b^2)^{-1/2} \cos^{-1} [(a \cos x + b)/(a + b \cos x)],$$

$$2(a^2 - b^2)^{-1/2} \tan^{-1} \left\{ \sqrt{\frac{a-b}{a+b}} \tan \frac{x}{2} \right\}$$

has the derivative

$$1/(a + b \cos x).$$

2) Show that each of the functions,

$$2 \sin^{-1} [(x - \alpha) / (\alpha - \beta)]^{1/2}$$

$$2 \tan^{-1} [(x - \beta) / (\alpha - x)]^{1/2}$$

$$\sin^{-1} \left\{ 2 \left[ \frac{(\alpha - x)(x - \beta)}{(\alpha - \beta)} \right]^{1/2} \right\},$$

has the derivative

$$\sqrt{(\alpha - x)(x - \beta)}$$

1)

$$(a^2 - b^2)^{-1/2} \cos^{-1} [(a \cos x + b)/(a + b \cos x)],$$

$$2(a^2 - b^2)^{-1/2} \tan^{-1} \left\{ \sqrt{\frac{a-b}{a+b}} \tan \frac{x}{2} \right\}$$

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$1/(a + b \cos x)$  ට සමාන අවකල සංගුණකයක් ඇති බව පෙන්වන්න.

2)

$$2 \sin^{-1} [(x - \alpha) / (\alpha - \beta)]^{1/2}$$

$$2 \tan^{-1} [(x - \beta) / (\alpha - x)]^{1/2}$$

$$\sin^{-1} \left\{ 2 \left[ \frac{(\alpha - x)(x - \beta)}{(\alpha - \beta)} \right]^{1/2} \right\},$$

එක් එක් ශ්‍රිතයකට  $\sqrt{(\alpha - x)(x - \beta)}$  ට සමාන

අවකල සංගුණකයක් ඇති බව පෙන්වන්න.