Let $g(\theta) = \frac{1}{2}\log\left(\frac{1+\theta}{1-\theta}\right)$. This is an inc. fn on $(-1,1)$ since $1+\theta$ inc. on $(-1,1)$ and $1-\theta$ dec. on $(-1,1)$. We have

$$g^{-1}(\theta) = \frac{e^{2\theta}+1}{e^{2\theta}-1}.$$

(12.25) gives us that

$$\sqrt{n-3}\,(g(\hat{\theta}) - g(\theta)) \overset{\text{approx}}{\sim} N(0,1).$$

So

$$1-\alpha \approx P(-z_{\alpha/2} < \sqrt{n-3}\,(g(\hat{\theta}) - g(\theta)) < z_{\alpha/2})$$

$$= P\left(g(\hat{\theta}) - \frac{z_{\alpha/2}}{\sqrt{n-3}} < g(\theta) < g(\hat{\theta}) + \frac{z_{\alpha/2}}{\sqrt{n-3}}\right)$$

$$= P\left(g^{-1}\left(g(\hat{\theta}) - \frac{z_{\alpha/2}}{\sqrt{n-3}}\right) < \theta < g^{-1}\left(g(\hat{\theta}) + \frac{z_{\alpha/2}}{\sqrt{n-3}}\right)\right).$$

So to obtain an approx. c.i. for θ, get values for $g(\hat{\theta}) \pm \frac{z_{\alpha/2}}{\sqrt{n-3}}$ and apply the inv. transformation.