

40. Let  $u = \tan^{-1}x$ , so  $\tan u = x$ . Then from the triangle  $\sin(\tan^{-1}x) = \sin u$   
$$= \frac{x}{\sqrt{1+x^2}}.$$

42. Let  $u = \tan^{-1}x$ , so  $\tan u = x$ . Then from the triangle  $\cos(\tan^{-1}x) = \cos u$   
$$= \frac{1}{\sqrt{1+x^2}}.$$

