

Inverse Trig Functions

Find the exact value of each expression.

1) $\tan^{-1} \sqrt{3}$

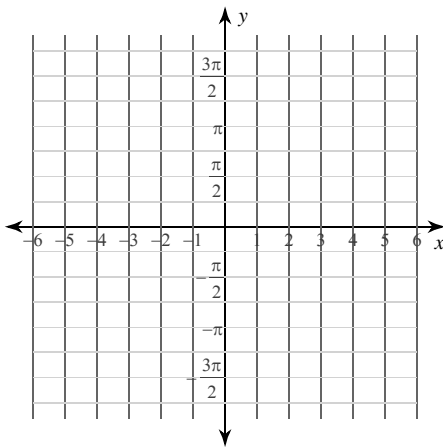
2) $\cos^{-1} \frac{\sqrt{3}}{2}$

3) $\sin^{-1} \frac{1}{2}$

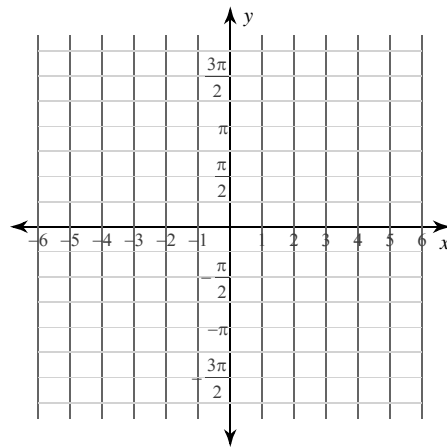
4) $\csc^{-1} \frac{2\sqrt{3}}{3}$

Identify the domain and range of each. Then sketch the graph.

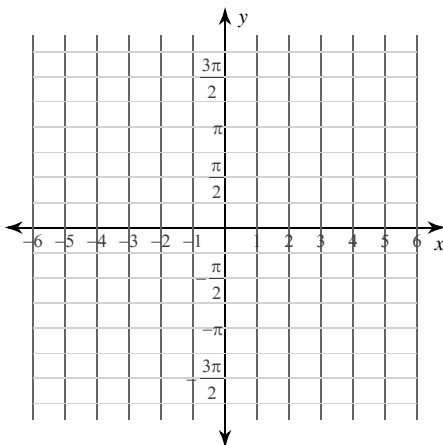
5) $y = \tan^{-1} 3x$



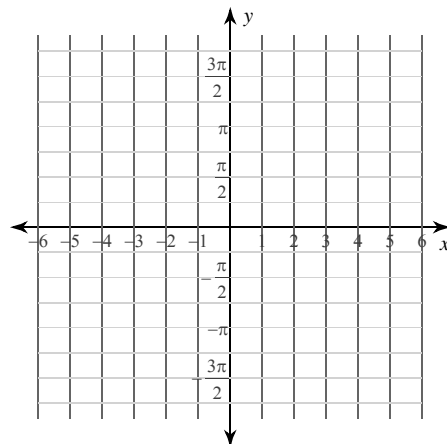
6) $y = \cos^{-1} x - 2$



7) $y = \sec^{-1}(x + 1)$



8) $y = \sin^{-1} \frac{x}{3}$



Find the exact value of each expression.

9) $\csc^{-1}(\cos 0)$

10) $\cos \sec^{-1} \frac{2\sqrt{3}}{3}$

11) $\csc \sec^{-1} \frac{\sqrt{6}}{2}$

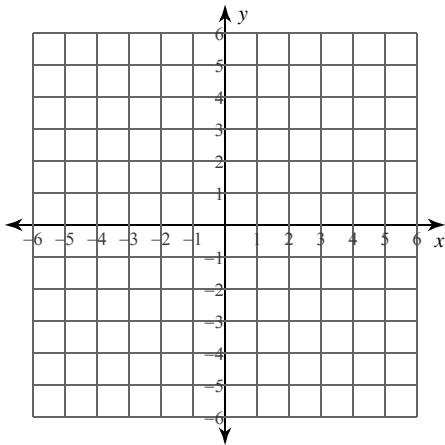
12) $\sin^{-1}(\sec 0)$

13) $\sec \cot^{-1} \frac{2\sqrt{21}}{21}$

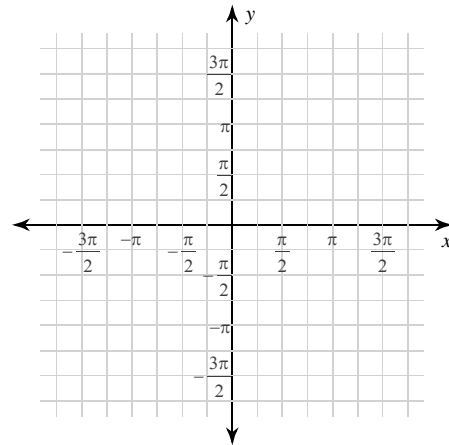
14) $\tan^{-1}(\sec \pi)$

Identify the domain and range of each. Then sketch the graph.

15) $y = \sin \cot^{-1} x$



16) $y = \tan^{-1}(\cot x)$



Write each trigonometric expression as an algebraic expression.

17) $\sin \tan^{-1} x$

18) $\csc \cot^{-1} x$

19) $\sec \cot^{-1} x$

20) $\sec \cos^{-1} x$

Inverse Trig Functions

Find the exact value of each expression.

1) $\tan^{-1} \sqrt{-3}$

$$-\frac{\pi}{3}$$

2) $\cos^{-1} -\frac{\sqrt{3}}{2}$

$$\frac{5\pi}{6}$$

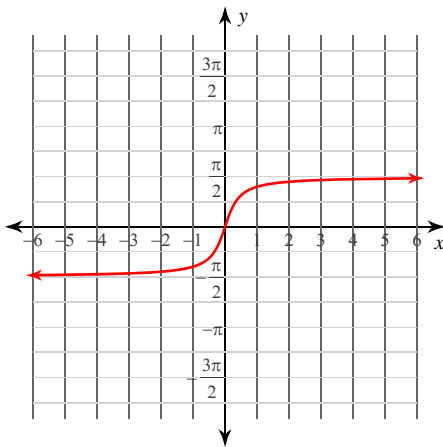
3) $\sin^{-1} -\frac{1}{2} -\frac{\pi}{6}$

4) $\csc^{-1} \frac{2\sqrt{3}}{3}$

$$\frac{\pi}{3}$$

Identify the domain and range of each. Then sketch the graph.

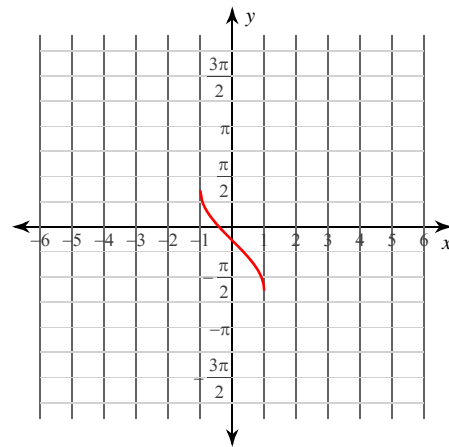
5) $y = \tan^{-1} 3x$



Domain: All reals

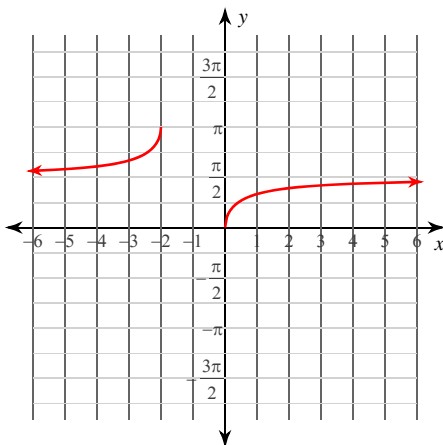
Range: $-\frac{\pi}{2} < y < \frac{\pi}{2}$

6) $y = \cos^{-1} x - 2$

Domain: $-1 \leq x \leq 1$

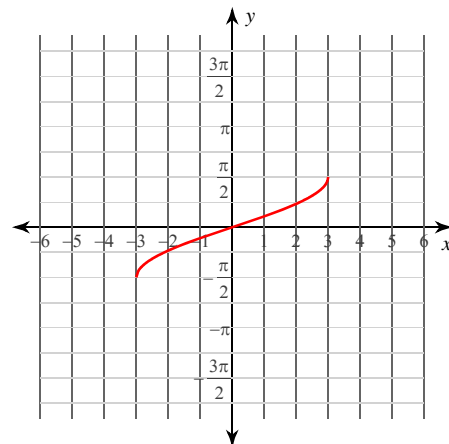
Range: $-2 \leq y \leq \pi - 2$

7) $y = \sec^{-1}(x + 1)$

Domain: $x \leq -2$ or $x \geq 0$

Range: $0 \leq y \leq \pi, y \neq \frac{\pi}{2}$

8) $y = \sin^{-1} \frac{x}{3}$

Domain: $-3 \leq x \leq 3$

Range: $-\frac{\pi}{2} \leq y \leq \frac{\pi}{2}$

Find the exact value of each expression.

9) $\csc^{-1}(\cos 0)$

$$\frac{\pi}{2}$$

10) $\cos \sec^{-1} \frac{2\sqrt{3}}{3}$

$$\frac{\sqrt{3}}{2}$$

11) $\csc \sec^{-1} \frac{\sqrt{6}}{2}$

$$\sqrt{3}$$

12) $\sin^{-1}(\sec 0)$

$$\frac{\pi}{2}$$

13) $\sec \cot^{-1} \frac{2\sqrt{21}}{21}$

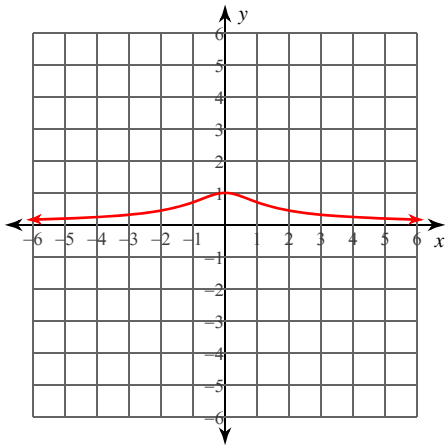
$$\frac{5}{2}$$

14) $\tan^{-1}(\sec \pi)$

$$-\frac{\pi}{4}$$

Identify the domain and range of each. Then sketch the graph.

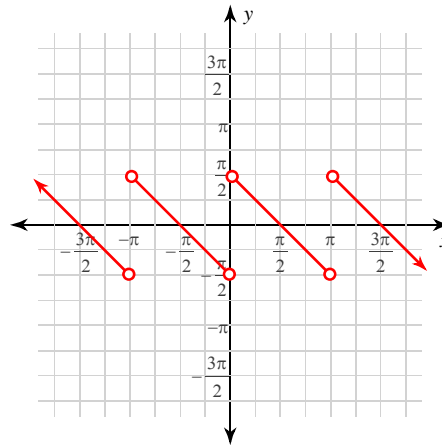
15) $y = \sin \cot^{-1} x$



Domain: All reals

Range: $0 < y \leq 1$

16) $y = \tan^{-1}(\cot x)$



Domain: All reals except $x = k\pi$ for all integers k

Range: $-\frac{\pi}{2} < y < \frac{\pi}{2}$

Write each trigonometric expression as an algebraic expression.

17) $\sin \tan^{-1} x$

$$\frac{x}{\sqrt{1+x^2}}$$

18) $\csc \cot^{-1} x$

$$\sqrt{x^2 + 1}$$

19) $\sec \cot^{-1} x$

$$\frac{\sqrt{x^2 + 1}}{x}$$

20) $\sec \cos^{-1} x$

$$\frac{1}{x}$$