Name_____

Inverse Trig Functions

Date_____ Period_____

Find the exact value of each expression.
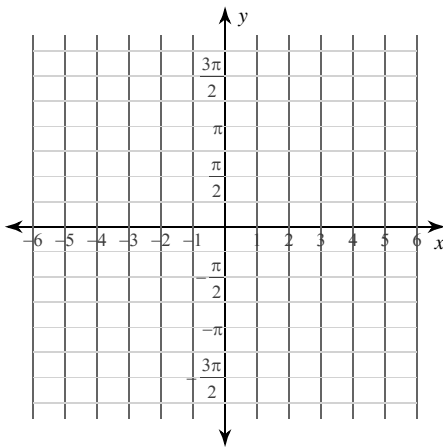
1) $\tan^{-1}\left(-\sqrt{3}\right)$

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

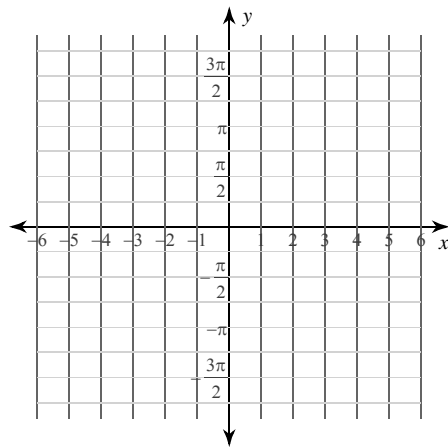3) $\sin^{-1}-\dfrac{1}{2}$

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

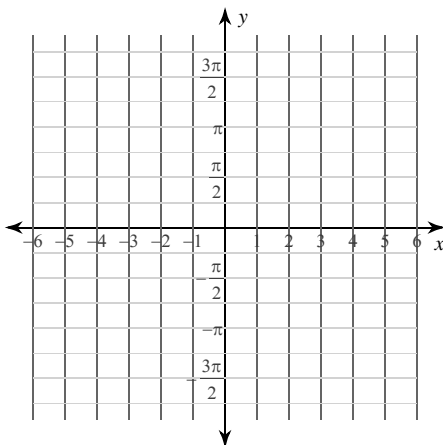**Identify the domain and range of each. Then sketch the graph.**
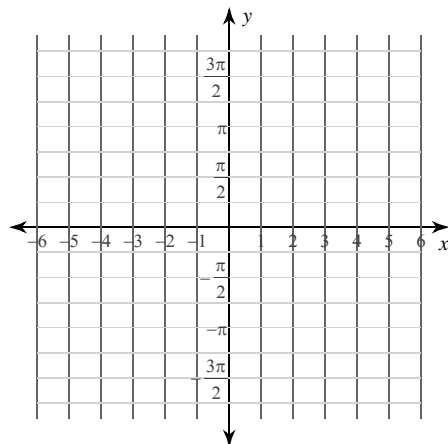
5) $y = \tan^{-1} 3x$

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

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

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

Find the exact value of each expression.

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

10) $\cos \sec^{-1} \dfrac{2\sqrt{3}}{3}$
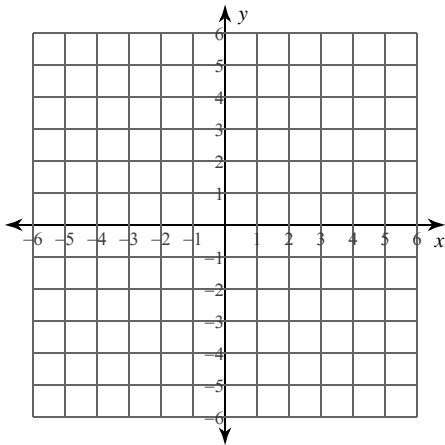
11) $\csc \sec^{-1} \dfrac{\sqrt{6}}{2}$

12) $\sin^{-1}(\sec 0)$
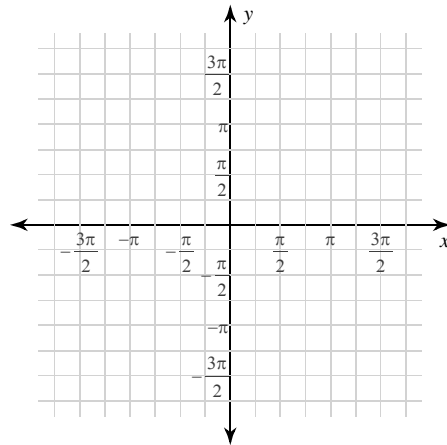
13) $\sec \cot^{-1} \dfrac{2\sqrt{21}}{21}$

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

Name_____

Inverse Trig Functions

Date_____ Period____

Find the exact value of each expression.

1) $\tan^{-1}\left(-\sqrt{3}\right)$

$-\dfrac{\pi}{3}$

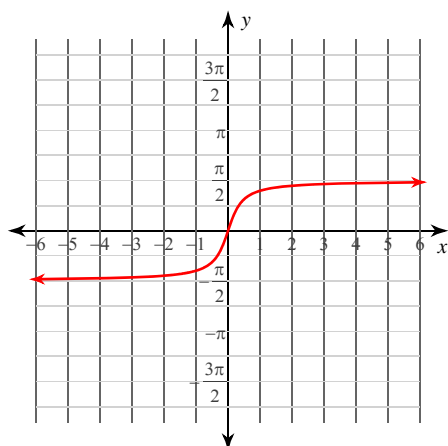2) $\cos^{-1}-\dfrac{\sqrt{3}}{2}$

$\dfrac{5\pi}{6}$

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

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

$\dfrac{\pi}{3}$

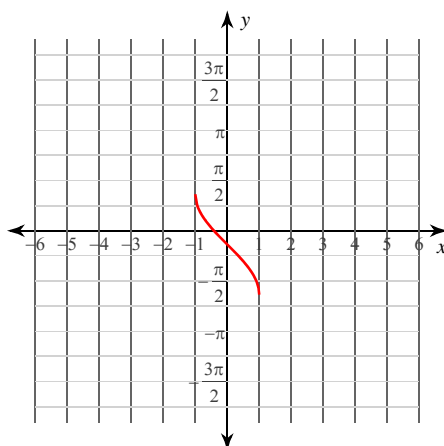**Identify the domain and range of each. Then sketch the graph.**
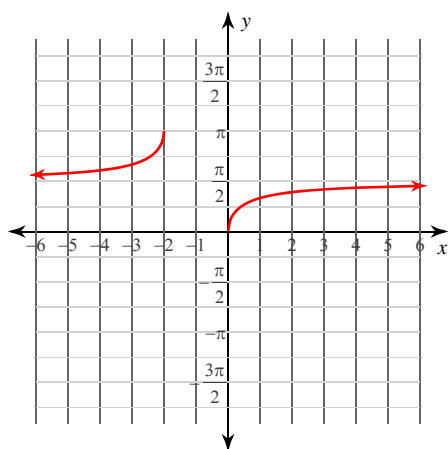
5) $y = \tan^{-1} 3x$

Domain: All reals

Range: $-\dfrac{\pi}{2} < y < \dfrac{\pi}{2}$
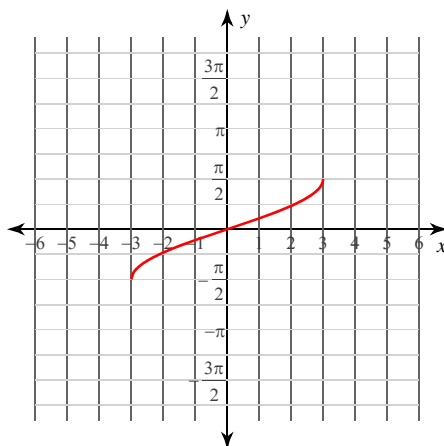
6) $y = \cos^{-1} x - 2$

Domain: $-1 \le x \le 1$

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

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

Domain: $x \le -2$ or $x \ge 0$

Range: $0 \le y \le \pi$, $y \ne \dfrac{\pi}{2}$

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

Domain: $-3 \le x \le 3$

Range: $-\dfrac{\pi}{2} \le y \le \dfrac{\pi}{2}$

Find the exact value of each expression.

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

0

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

$\dfrac{\sqrt{3}}{2}$

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

$\sqrt{3}$

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

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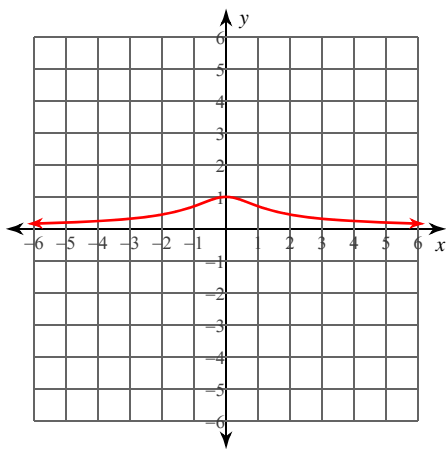
13) $\sec \cot^{-1} \dfrac{2\sqrt{21}}{21}$

$\dfrac{5}{2}$

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

$-\dfrac{\pi}{4}$

Identify the domain and range of each. Then sketch the graph.
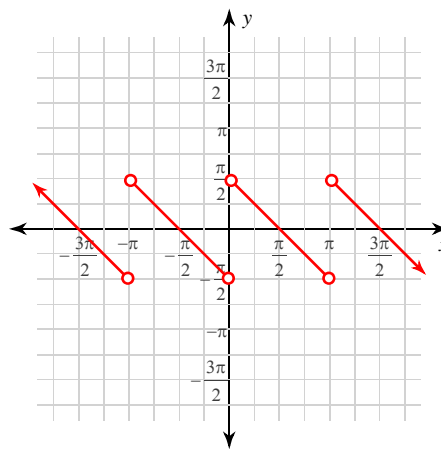
15) $y = \sin \cot^{-1} x$

Domain: All reals
Range: $0 < y \le 1$

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

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

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

Write each trigonometric expression as an algebraic expression.

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

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

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

$\sqrt{x^2+1}$

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

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

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

$\dfrac{1}{x}$