

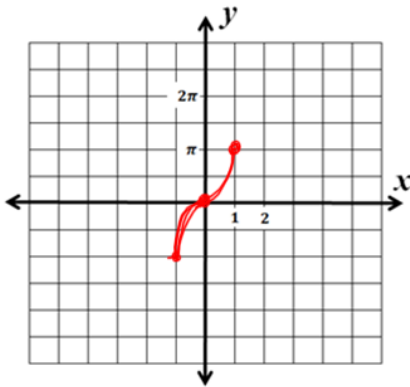
# 10.4 Practice – Inverse Trig Functions

Name: Solutions

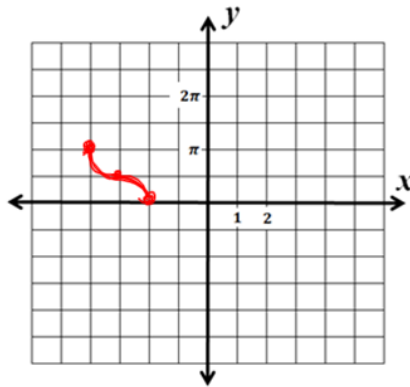
Pre-Calculus

**For 1-9, graph the function.**

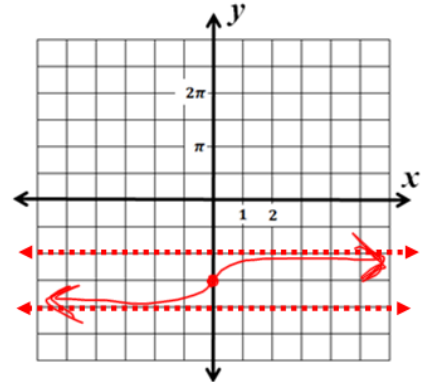
1)  $y = 2 \sin^{-1} x$



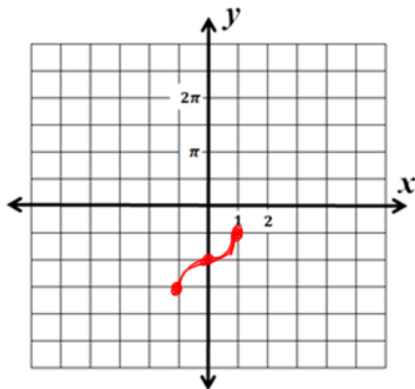
2)  $y = \cos^{-1}(x + 3)$



3)  $y = \tan^{-1} x - \frac{3\pi}{2}$

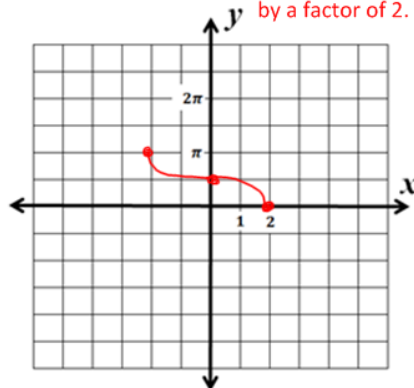


4)  $y = \sin^{-1} x - \pi$

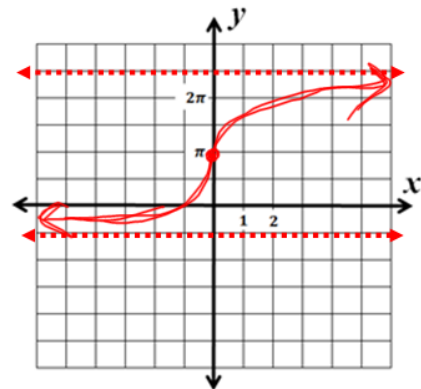


5)  $y = \cos^{-1} \frac{x}{2}$

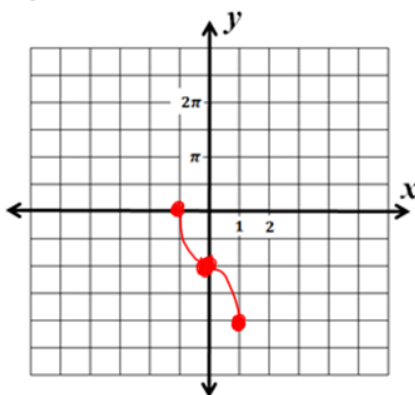
horizontal stretch by a factor of 2.



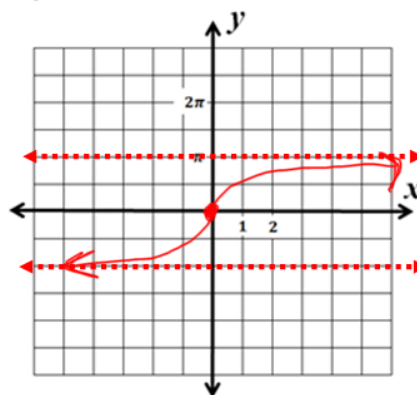
6)  $y = 3 \tan^{-1} x + \pi$



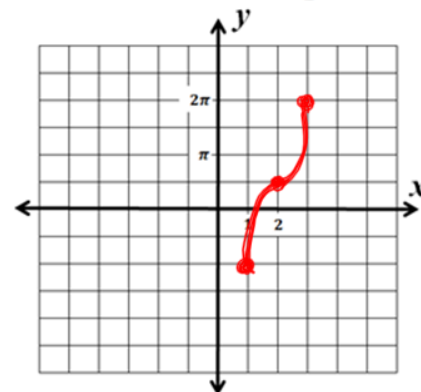
7)  $y = 2 \cos^{-1} x - 2\pi$



8)  $y = 2 \tan^{-1} x$



9)  $y = 3 \sin^{-1}(x - 2) + \frac{\pi}{2}$



**For 10-17, find the exact value of the expression. Do not use a calculator! (radians or degrees both work)**

10)  $\sin(\arcsin(\frac{1}{2}))$

$\sin(30^\circ)$

$\frac{1}{2}$

11)  $\cos(\arcsin(\frac{1}{2}))$

$\cos(30^\circ)$

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

12)  $\cos(\arccos(\frac{\sqrt{3}}{2}))$

$\cos(30^\circ)$

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

13)  $\tan(\arcsin(\frac{\sqrt{3}}{2}))$

$\tan(60^\circ)$

$\sqrt{3}$

14)  $\sec(\arctan(-\sqrt{3}))$   
 $\sec(-60^\circ)$   
 $\frac{1}{\cos(-60^\circ)}$   
 $\frac{1}{\frac{1}{2}} = \boxed{2}$

15)  $\sin(\operatorname{arccsc}(2))$   
 $\sin(30^\circ)$   
 $\boxed{\frac{1}{2}}$

16)  $\cos(\operatorname{arcsec}(\frac{2\sqrt{3}}{3}))$   
 $\cos(30^\circ)$   
 $\boxed{\frac{\sqrt{3}}{2}}$

17)  $\csc(\arctan(1))$   
 $\csc(45^\circ)$   
 $\frac{1}{\sin(45^\circ)}$   
 $\frac{1}{\frac{1}{\sqrt{2}}} = \boxed{\sqrt{2}}$

For 18-25, find the approximate value of the expression by using a calculator. Round to three decimals. Only one answer is necessary. Assume degrees for inverse functions.

18)  $\sin^{-1}(\frac{1}{2})$   
 $\boxed{30^\circ}$

19)  $\csc(20^\circ)$   
 $\frac{1}{\sin 20^\circ}$   
 $\boxed{2.924}$

20)  $\operatorname{arcsec}(2)$   
 $\cos^{-1}(\frac{1}{2}) =$   
 $\boxed{60^\circ}$

21)  $\sec(0.473)$  *RADIANS!*  
 $\frac{1}{\cos(0.473)}$   
 $\boxed{1.123}$

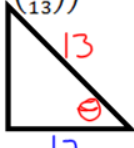
22)  $\cot(\frac{\pi}{2})$  *RADIANS!*  
 $\frac{1}{\tan(\frac{\pi}{2})} =$   
 $\boxed{0.216}$

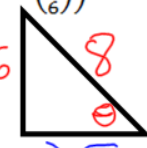
23)  $\cot^{-1}(\frac{9}{2})$   
 $\tan^{-1}(\frac{2}{9}) =$   
 $\boxed{12.529^\circ}$


24)  $\operatorname{arccsc}(1.11)$   
 $\sin^{-1}(\frac{1}{1.11}) \approx$   
 $\boxed{64.277^\circ}$

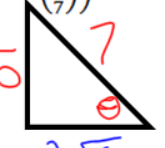
25)  $\sec^{-1}(6)$   
 $\cos^{-1}(\frac{1}{6}) =$   
 $\boxed{80.406^\circ}$

For 26-29, use a reference triangle to find the exact value of the expression.

26)  $\tan(\sin^{-1}(\frac{5}{13}))$   
 $5^2 + a^2 = 13^2$   
 $a = 12$   
  
 $\frac{\text{opp}}{\text{adj}} = \frac{5}{12}$   
 $\boxed{\frac{5}{12}}$

27)  $\sec(\operatorname{arccsc}(\frac{8}{6}))$   
 $6^2 + a^2 = 8^2$   
 $a = \sqrt{20} = 2\sqrt{5}$   
  
 $\frac{\text{hyp}}{\text{adj}} = \frac{8}{2\sqrt{5}} = \frac{4}{\sqrt{5}}$   
 $\boxed{\frac{4\sqrt{5}}{5}}$

28)  $\csc(\cot^{-1}(\frac{3}{2}))$   
 $3^2 + 2^2 = h^2$   
 $\sqrt{13} = h$   
  
 $\frac{\text{hyp}}{\text{opp}} = \frac{\sqrt{13}}{3}$   
 $\boxed{\frac{\sqrt{13}}{3}}$

29)  $\sec(\sin^{-1}(\frac{5}{7}))$   
 $5^2 + a^2 = 7^2$   
 $a = \sqrt{24} = 2\sqrt{6}$   
  
 $\frac{\text{hyp}}{\text{adj}} = \frac{7}{2\sqrt{6}} = \frac{7\sqrt{6}}{12}$   
 $\boxed{\frac{7\sqrt{6}}{12}}$

**Skillz Review:** Factor Out a Monomial (Undistribute)

$6x^2 - 15x$

$3x(2x - 5)$

$\cos^2 x - \cos x$

$\cos x (\cos x - 1)$

$2 \sin^3 x + 12 \sin^2 x - 6 \sin x$

$2 \sin x (\sin^2 x + 6 \sin x - 3)$

**Skillz Review:** Factor out a Binomial (unFOIL)

$3x^2 - x - 10$

$3x^2 - 6x + 5x - 10$   
 $3x(x - 2) + 5(x - 2)$   
 $\boxed{(x - 2)(3x + 5)}$

$3 \sin^2 x - \sin x - 10$

$(\sin x - 2)(3 \sin x + 5)$

$\cos^2 x + 8 \cos x + 7$

$(\cos x + 7)(\cos x + 1)$