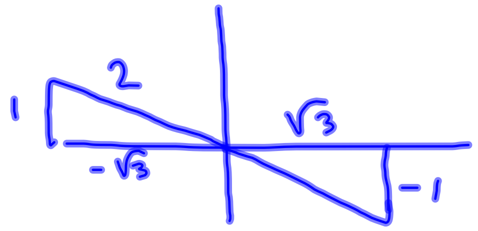
#2b arccot$(-\sqrt{3})$ A bit of a zinger.

Pic for angle whose cotangent is $-\sqrt{3}$



Your calculator does

arctan(x)

$\tan^{-1}(x)$

But no arccot(x)

no $\cot^{-1}(x)$.

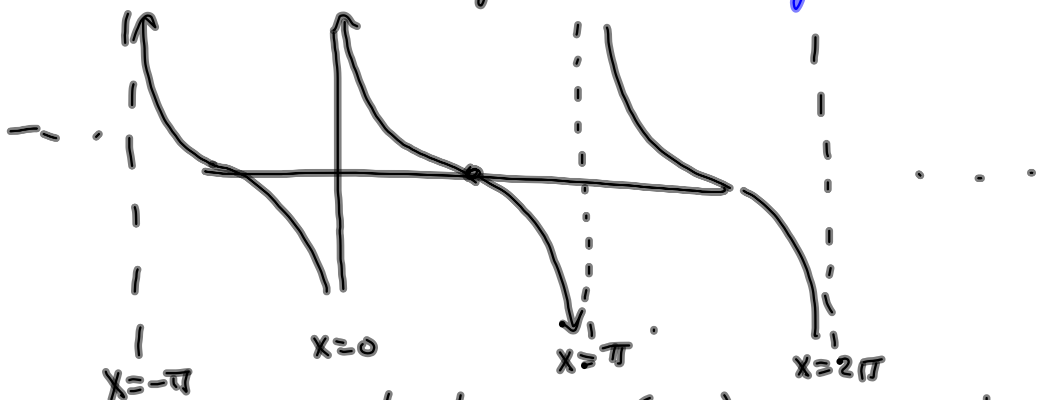
So you could find

$$\arctan\left(-\frac{1}{\sqrt{3}}\right) = -\frac{\pi}{6}$$

However, $\mathcal{R}(\arctan(x)) = \left(-\frac{\pi}{2}, \frac{\pi}{2}\right)$

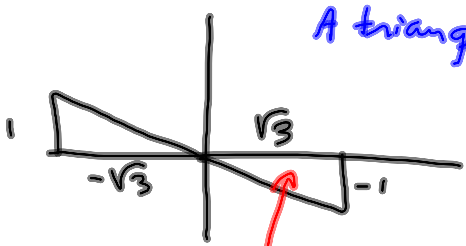
what's the $\mathcal{R}(\text{arccot}(x))$?

Go back to its graph: (the graph of cot(x))



Restrict x to $(0, \pi)$ to keep it 1-to-1.

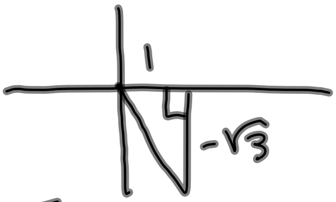
We might have a use for cofunction identities



A triangle w/ $\arctan(-\frac{1}{\sqrt{3}})$ has cotangent of $-\sqrt{3}$

No. $-\frac{\pi}{6} \notin \mathcal{R}(\text{arccot}(x))$

Punch out $\tan^{-1}(-\sqrt{3}) = -\frac{\pi}{3}$

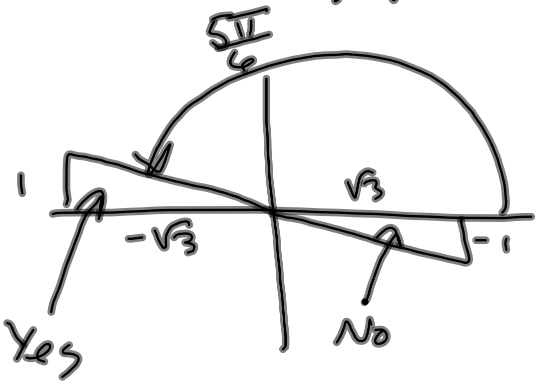


Cofunction:

$\cot(\frac{\pi}{2} - \theta) = \tan\theta$

What's $\frac{\pi}{2} - (-\frac{\pi}{3})$?

$\frac{5\pi}{6} = \text{arccot}(-\sqrt{3})$



So one trick for $\text{arccot}(-\sqrt{3})$ is $\frac{\pi}{2} - \arctan(-\sqrt{3})$!

Until we discuss $\mathcal{R}(\text{arccot}(x))$

would've ≠ would of

$\mathcal{R}(\text{arcsec}(x))$

$\mathcal{R}(\text{arccsc}(x))$

this arccot(x) thing is bonus. If I hurt you on #2b, I shouldn't've.

1. Hor stretch/shrink $\sin(ax)$ $x \to \frac{x}{a}$ *
2. Ver stretch/shrink $a\sin(x)$ $y \to ay$

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3. Hor. shift $\sin(x-a)$ $x \to x+a$ *
4. Ver. shift $\sin(x)+a$ $y \to y+a$

$2x-\pi = 2\left(\frac{2x}{2} - \frac{\pi}{2}\right) = 2\left(x-\frac{\pi}{2}\right)$

$g(x) = 4\sin(2x-\pi)+7$

$4\sin\left(2\left(x-\frac{\pi}{2}\right)\right)+7$

1 2

$f(x) = \sin(x) \longrightarrow \sin(2x) = f(2x)$

$x \to \frac{x}{2}$

4

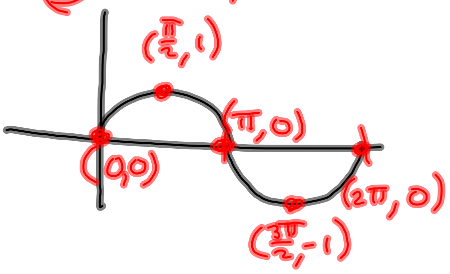
3 $4\sin(2x) = 4f(2x) \longrightarrow 4\sin\left(2\left(x-\frac{\pi}{2}\right)\right) = 4f\left(2\left(x-\frac{\pi}{2}\right)\right)$

$y \to 4y$

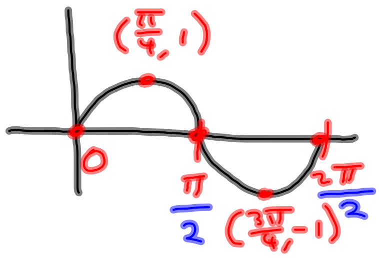
5 $\boxed{4\sin\left(2\left(x-\frac{\pi}{2}\right)\right)+7}$

$\frac{\frac{\pi}{2}}{2} = \frac{\pi}{2}\cdot\frac{1}{2} = \frac{\pi}{4}$

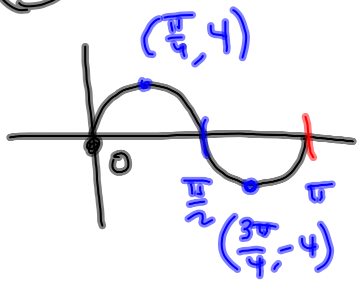
1 $\sin(x)$ $y \to y+7$



2 $\sin(2x)$



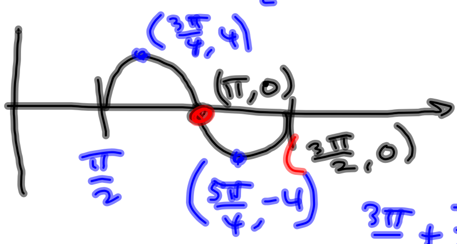
3 $4\sin(2x)$



4 $4\sin\left(2\left(x-\frac{\pi}{2}\right)\right)$

$x \to x+\frac{\pi}{2}$

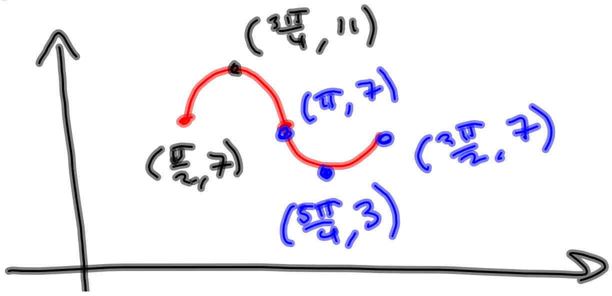
$\frac{\pi}{2}+\frac{\pi}{4}$



$\frac{3\pi}{4}+\frac{\pi}{2}$

$\pi + \frac{\pi}{2} = \frac{3\pi}{2}$

5 $4\sin\left(2\left(x-\frac{\pi}{2}\right)\right)+7$



Feb 27-8:28 AM

$f(x) = x^3 - 5x^2 + 7x - 11$

$3f(7x-5) - 52$

$3f(7(x-\frac{5}{7})) - 52$

$f(x) \rightarrow f(7x)$

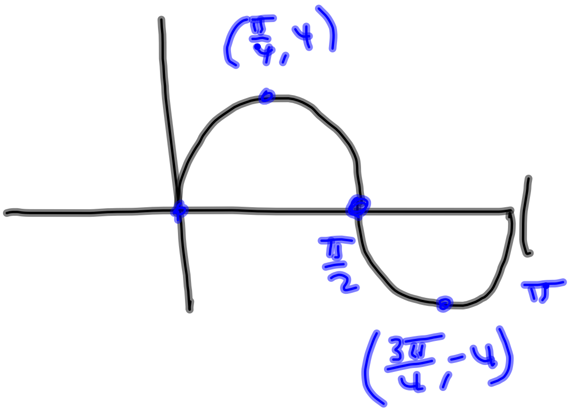
$\rightarrow f(7(x-\frac{5}{7}))$

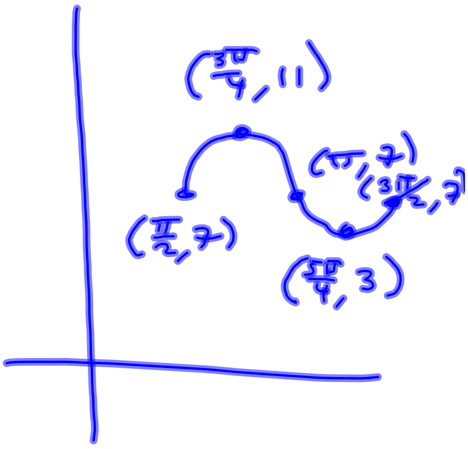
1. $x \rightarrow \frac{x}{7}$
2. $y \rightarrow 3y$
3. $x \rightarrow x + \frac{5}{7}$
4. $y \rightarrow y - 52$

$$g(x) = 4\sin(2x - \pi) + 7$$

$$= 4\sin(2(x - \tfrac{\pi}{2})) + 7$$

$4\sin(2x)$

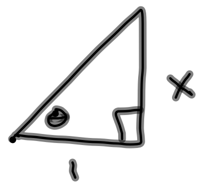




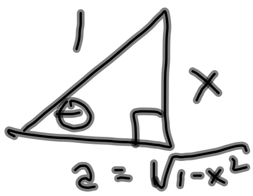
$4\sin(2(x - \frac{\pi}{2})) + 7$

Right $\frac{\pi}{2}$, up 7

$$\cot(\underset{\theta}{\arctan}(x)) = \frac{1}{x}$$

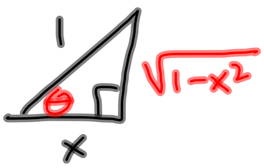


$$\tan(\underset{\theta}{\arcsin}(x)) = \frac{x}{\sqrt{1-x^2}}$$



$$a^2 + x^2 = 1$$
$$a^2 = 1 - x^2$$
$$a = \pm\sqrt{1-x^2}$$

take the pos.



$$\sin(\underbrace{\arccos(x)}_{\theta}) = \sqrt{1-x^2}$$