Semester Review (Day 2)

$y = a\,\_\_\_(bx+c) + d$

sec/csc

tan/cot

	sin/cos	sec/csc	tan/cot
amp	$\lvert a \rvert$	NA	NA
per.	$\frac{2\pi}{b}$	$\frac{2\pi}{b}$	$\frac{\pi}{b}$
V. S.	d	d	d
phase shift.	$bx+c=0$, $x=-c/b$	$bx+c=0$	$bx+c=0$

spacing: period · $\frac{1}{4}$

$y = -\frac{1}{4}\sec(7x-3\pi)-5$

amp NA $(-\frac{1}{4})$

per. $\frac{2\pi}{7}$

V.S. -5

P.S. $7x-3\pi=0$

$7x = 3\pi$

$x = \frac{3\pi}{7}$

$y = 2-\tan(x+\pi)$

amp NA (-1)

period $\frac{\pi}{1} = \pi$

V.S. 2

P.S. $x+\pi=0$

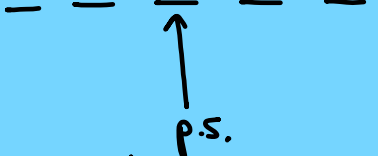
$x=-\pi$

Cos x starts at peak

Sin x starts on axis & moves up

P.S.

All except tan x



P.S.

$y = \tan x$

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$y = 2\cos\left(\frac{1}{3}x + \pi\right) + 1$

Spacing $\frac{3\pi}{2} \cdot \frac{1}{4} = \frac{3\pi}{8}$

$-\frac{3\pi}{4}$ $-\frac{3\pi}{8}$ 0 $\frac{3\pi}{8}$ $\frac{3\pi}{4}$

amp 2

per $\frac{2\pi}{1/3} = \frac{6\pi}{1} = \frac{3\pi}{2}$

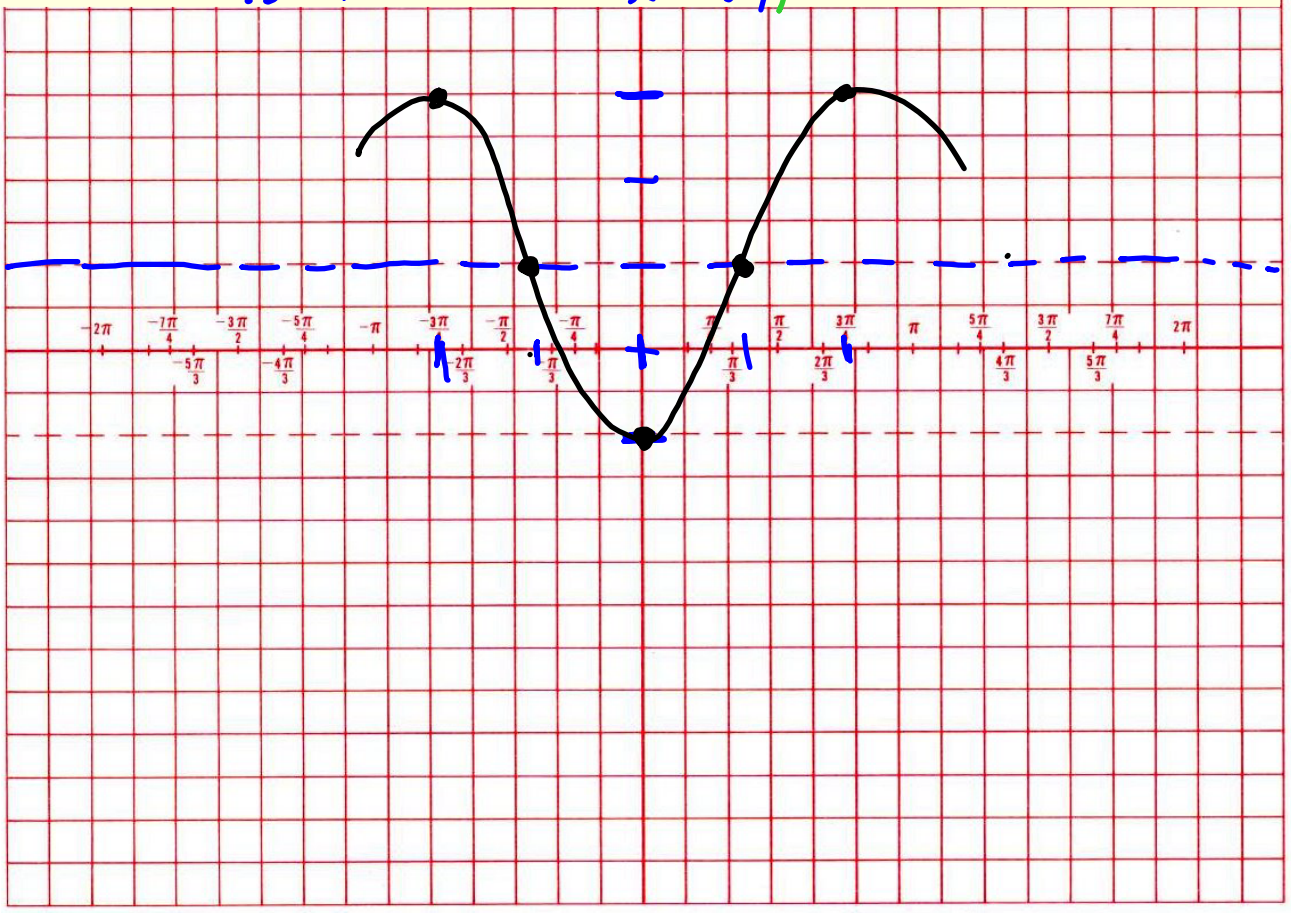
V.S. 1

P.S. $\frac{3}{4} \cdot \frac{1}{3}x = -\pi \cdot \frac{3}{4}$

$x = -3\pi/4$

P.S.

$-\frac{6\pi}{8}$ $-\frac{3\pi}{8}$ 0 $\frac{3\pi}{8}$ $\frac{6\pi}{8}$



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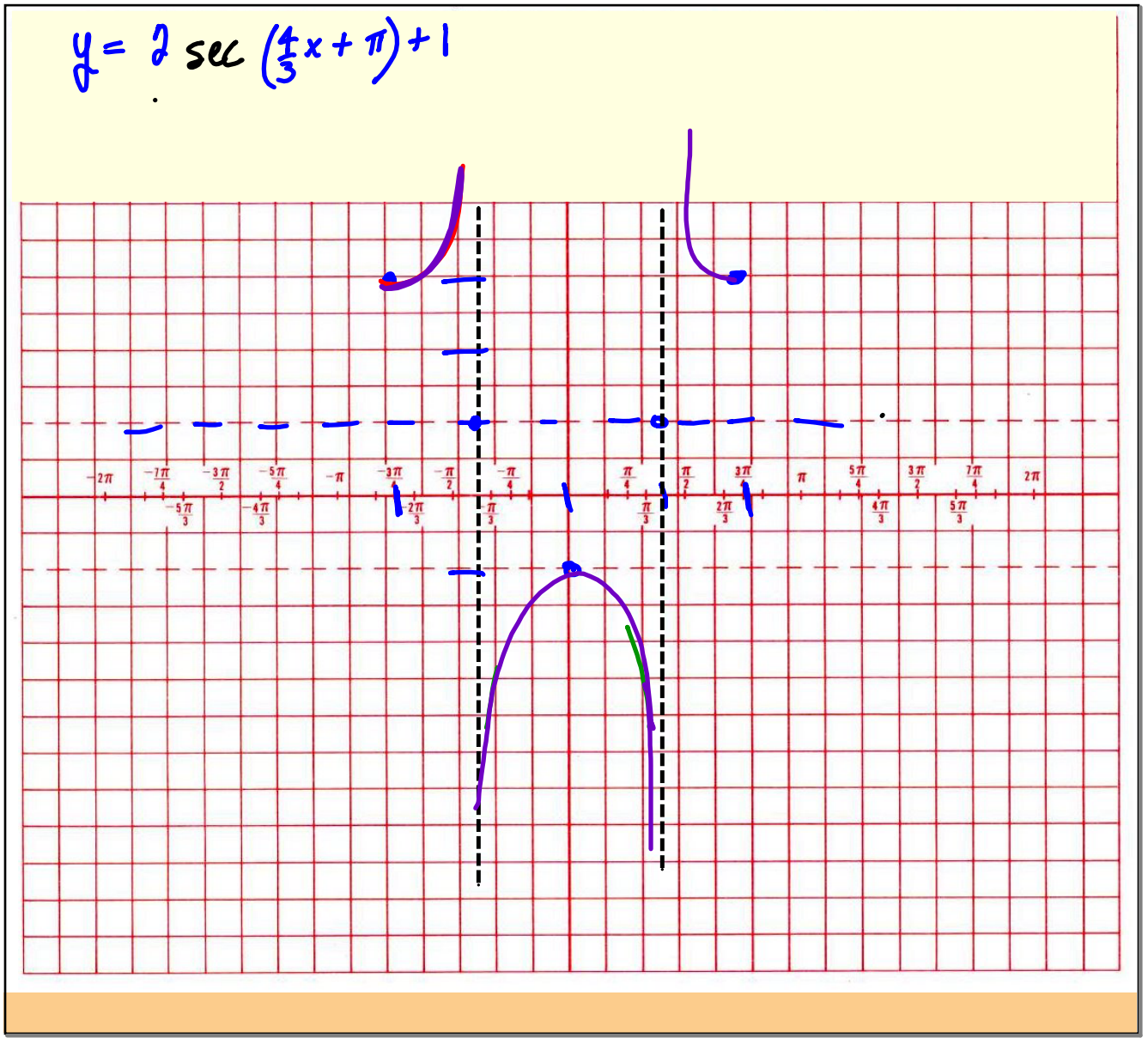
$y = 2\sec\left(\frac{1}{3}x + \pi\right) + 1$



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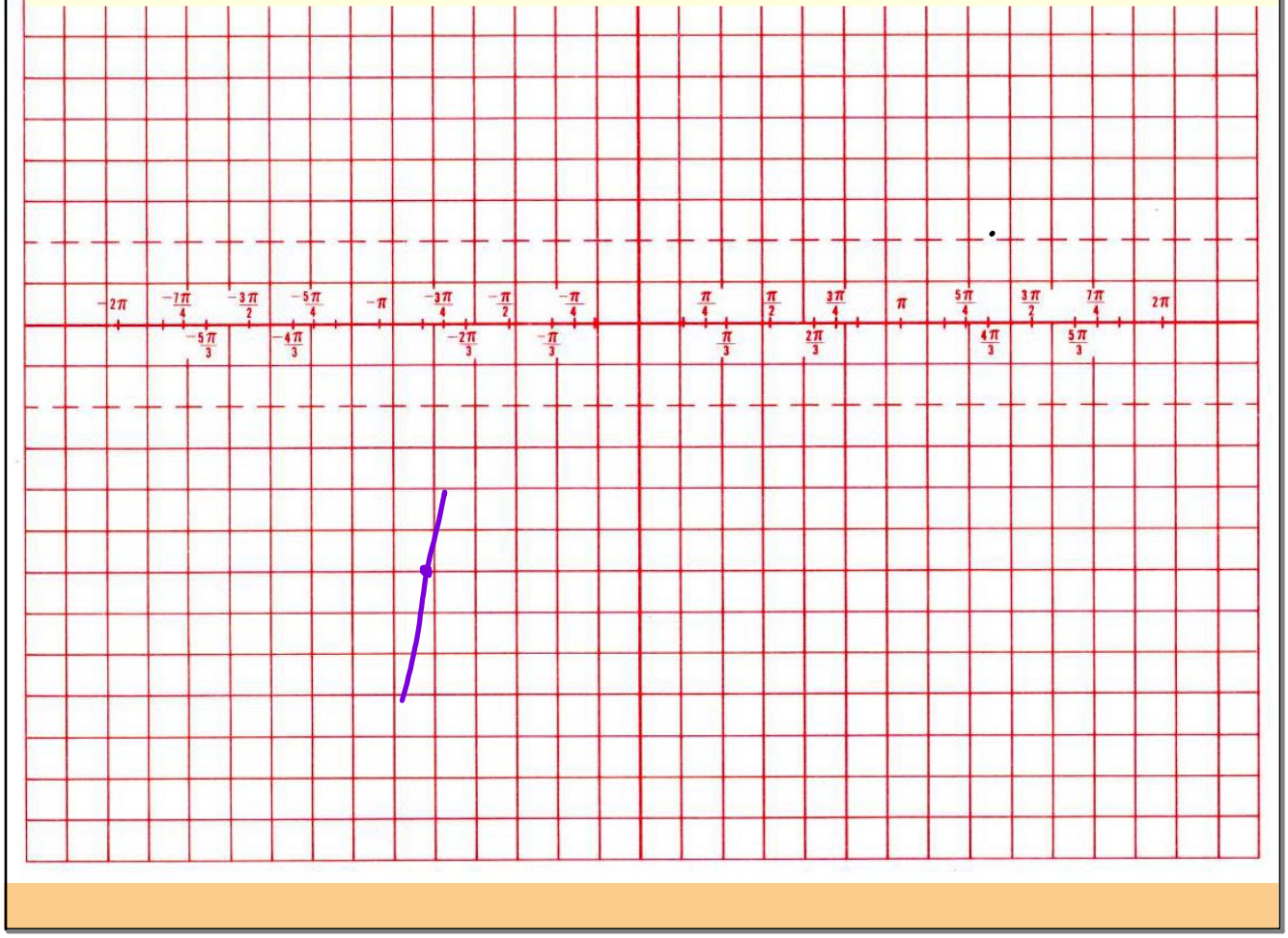
$y = 3\tan\left(\frac{1}{2}x + \frac{\pi}{6}\right)$



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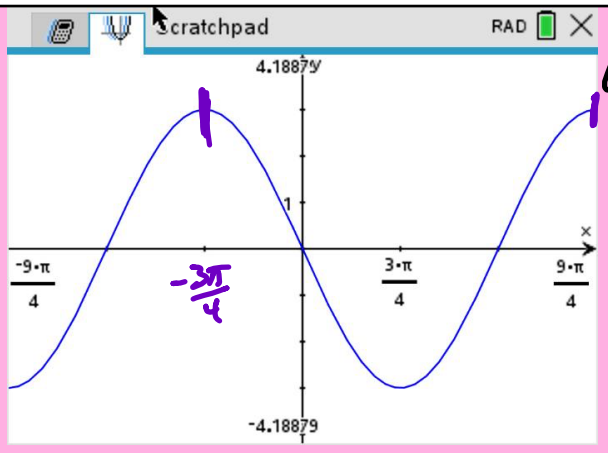


cos

R-L

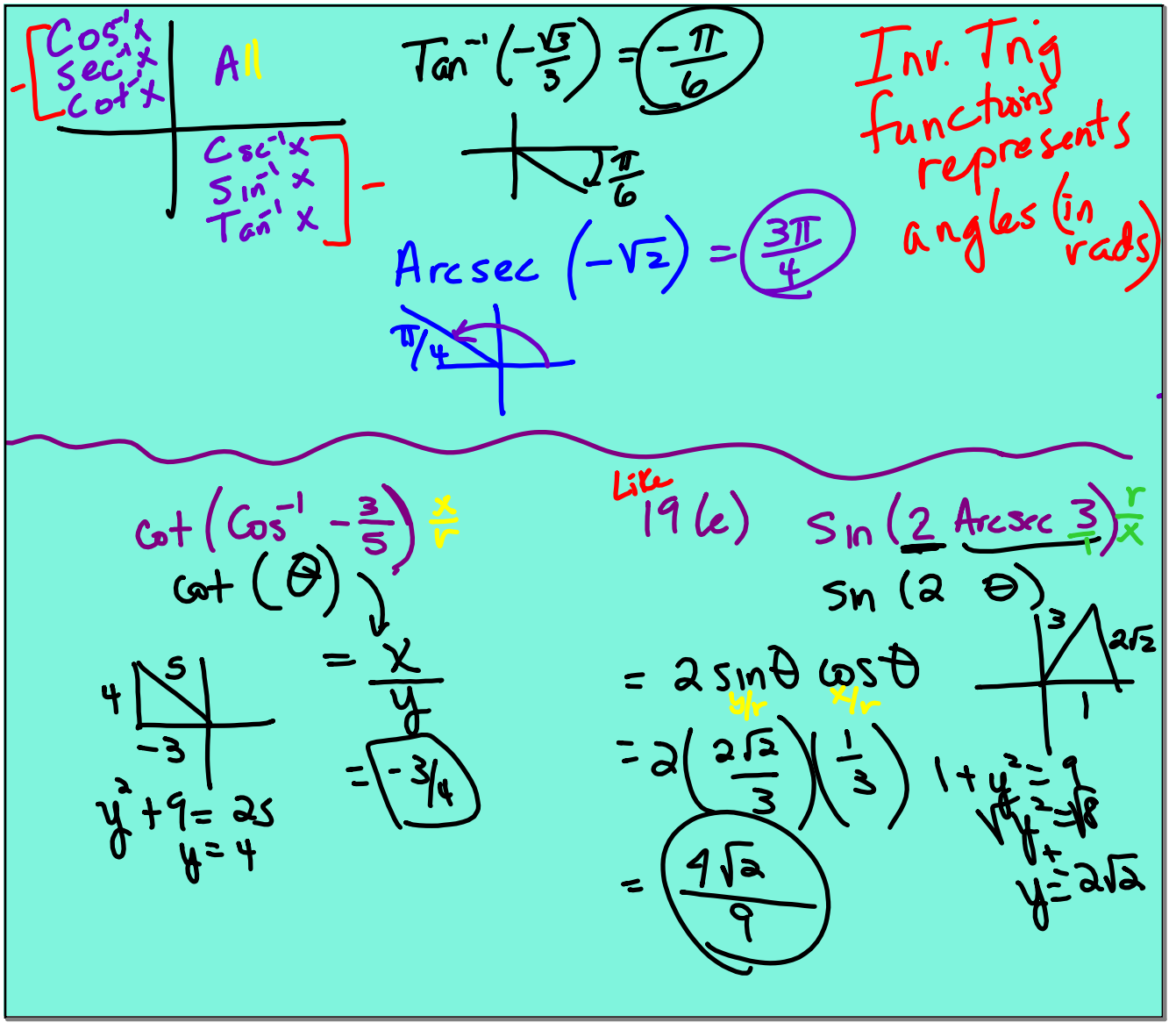
amp	per	v.s.	p.s.
3	$\frac{9\pi}{4} - \frac{3\pi}{4}$	0	$-\frac{3\pi}{4}$

$= 3\pi$

$b = \frac{2\pi}{\text{period}}$

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

$y = 3\cos\left(\frac{2}{3}\left(x + \frac{3\pi}{4}\right)\right)$


Cos⁻¹x
Sec⁻¹x
Cot⁻¹x
All
Csc⁻¹x
Sin⁻¹x
Tan⁻¹x
Tan⁻¹(-√3/3) = -π/6
π/6
Arcsec(-√2) = 3π/4
π/4
Inv. Trig functions represents angles (in rads)
Cot(Cos⁻¹ -3/5)
Cot(θ)
= x/y
= -3/4
5
4
-3
y²+9=25
y=4
Like 19(e)
Sin(2 Arcsec 3/1)
Sin(2θ)
= 2 sinθ cosθ
y/r x/r
= 2(2√2/3)(1/3)
= 4√2/9
3
2√2
1
1+y²=9
y²=8
y=2√2

21 d) $\tan\frac{x}{2} + 2\sin 2x = \csc x \quad [0, 2\pi)$

$\frac{1-\cos x}{\sin x} + 2\left(2\frac{\sin x}{\cos x}\right) = \frac{1}{\sin x}$

$\frac{1-\cos x}{\sin x}$ $\frac{\sin x}{1+\cos x}$

$\sin x\left[\frac{1-\cos x}{\sin x} + 4\sin x\cos x = \frac{1}{\sin x}\right]$

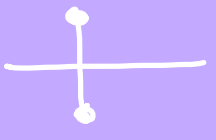
$1 - \cos x + 4\sin^2 x\cos x = 1$

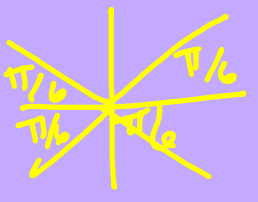
$4\sin^2 x\cos x - \cos x = 0$

$\cos x(4\sin^2 x - 1) = 0$

$\cos x = 0 \qquad \sqrt{\sin^2 x} = \sqrt{\frac{1}{4}}$

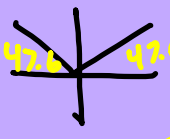
$\sin x = \pm\frac{1}{2}$





$x = \frac{\pi}{2}, \frac{3\pi}{2}, \frac{\pi}{6}, \frac{5\pi}{6}, \frac{7\pi}{6}, \frac{11\pi}{6}$

$\sin x = \frac{2 \pm \sqrt{2-?}}{?} \cdot = 0.7382$



$\sin^{-1}(0.7382)$

$\theta = 47.6°, 152.4°$

Polar

(r, θ)

Coordinates

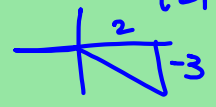
Rectangular (x, y)

$x = r\cos\theta$

$y = r\sin\theta$

Polar (r, θ)

Draw pict: $(2, -3)$



Form of a Complex

Rect. $x + yi$

Polar $r(\cos\theta + i\sin\theta)$

$2(\cos 47^\circ + i\sin 47^\circ) \cdot 5(\cos 193^\circ + i\sin 193^\circ)$

$= 10(\cos 240^\circ + i\sin 240^\circ)$

to Rect Form: $10\left(-\frac{1}{2} + i\frac{\sqrt{3}}{2}\right)$

$= -5 - 5i\sqrt{3}$

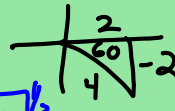
$\left[2(\cos 70^\circ + i\sin 70^\circ)\right]^6$

$2^6(\cos(6\cdot 70^\circ) + i\sin(6\cdot 70^\circ))$

$64(\cos 420^\circ + i\sin 420^\circ)$

Solve $x^3 - (2 - 2\sqrt{3}i) = 0$

$(x^3)^{1/3} = (2 - 2\sqrt{3}i)^{1/3}$



$\tan\theta = \frac{-2\sqrt{3}}{2}$

$\theta = 300^\circ$

$x = \left[4(\cos 300^\circ + i\sin 300^\circ)\right]^{1/3}$

$300^\circ \cdot \frac{1}{3}$

$360^\circ \cdot \frac{1}{3} = 120^\circ$

$x = 4^{1/3}(\cos 100^\circ + i\sin 100^\circ)$ (+120)

$4^{1/3}(\cos 220^\circ + i\sin 220^\circ)$

$4^{1/3}(\cos 340^\circ + i\sin 340^\circ)$

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