

Exam 3 - Review ☺

Find Amplitude, Period, phase shift, and vertical translation, and table, Then graph & label. 1-cycle

$$y = \frac{5}{2} - 3 \cos\left(\pi x - \frac{\pi}{4}\right)$$

$$|A| = 3 \quad P = \frac{2\pi}{B} = \frac{2\pi}{\pi} = 2 \quad \phi = -\frac{C}{B} = \frac{1}{4} \quad V.T.: y = \frac{5}{2}$$

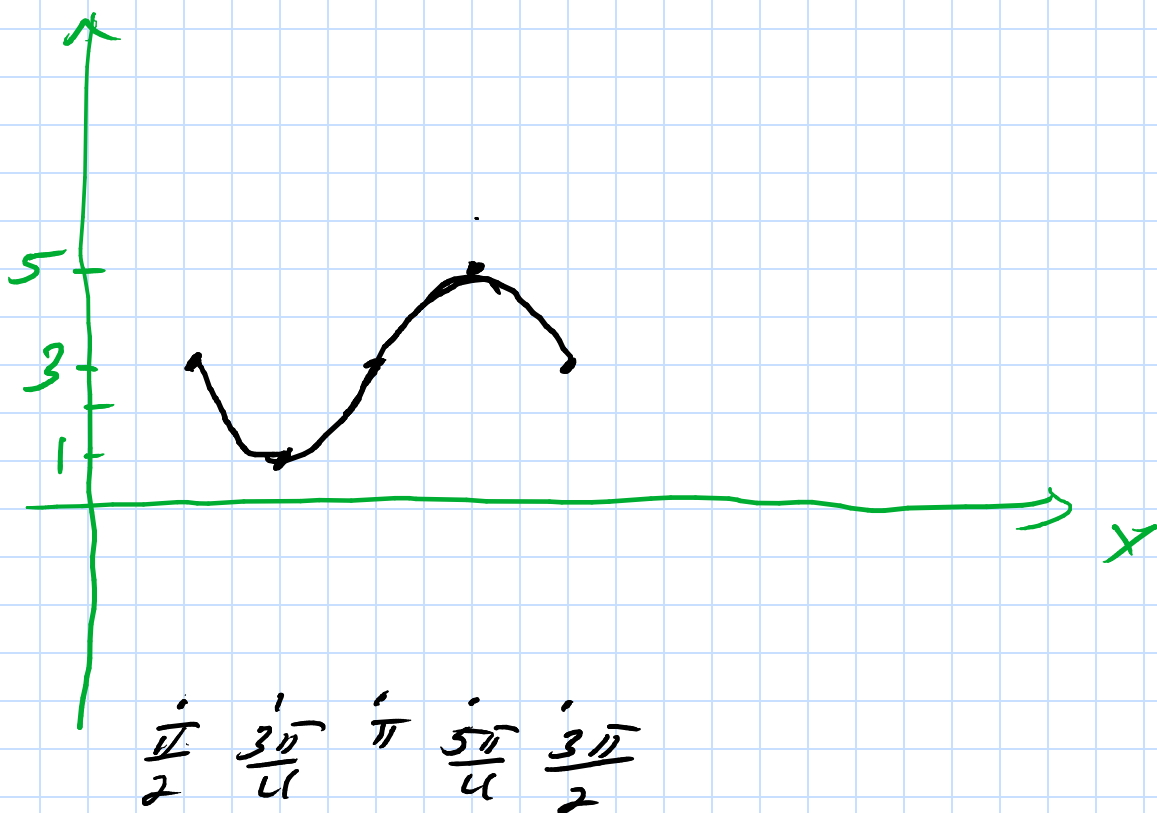
	x	y
0 + $\frac{1}{4}$	$\frac{1}{4}$	$-3 + \frac{5}{2} = -\frac{1}{2}$
$\frac{1}{2} + \frac{1}{4}$	$\frac{3}{4}$	$0 + \frac{5}{2} = \frac{5}{2}$
1	$\frac{5}{4}$	$3 + \frac{5}{2} = \frac{11}{2}$
$\frac{3}{2}$	$\frac{7}{4}$	$0 + \frac{5}{2} = \frac{5}{2}$
2	$\frac{9}{4}$	$-3 + \frac{5}{2} = -\frac{1}{2}$



$$2/ y = -2 \sin(2x - \pi) + 3$$

$$|A| = 2 \quad P = \frac{2\pi}{6} = \pi \quad \phi = \frac{\pi}{2} = -\frac{c}{6} \quad VT: y = 3$$

	X		y
$0 + \frac{\pi}{2}$	$\frac{\pi}{2}$	$0 + 3$	3
$\frac{\pi}{4} + \frac{\pi}{2}$	$\frac{3\pi}{4}$	$-2 + 3$	1
$\frac{\pi}{2}$	π	$0 + 3$	3
$\frac{3\pi}{4}$	$\frac{5\pi}{4}$	$2 + 3$	5
π	$\frac{3\pi}{2}$	$0 + 3$	3

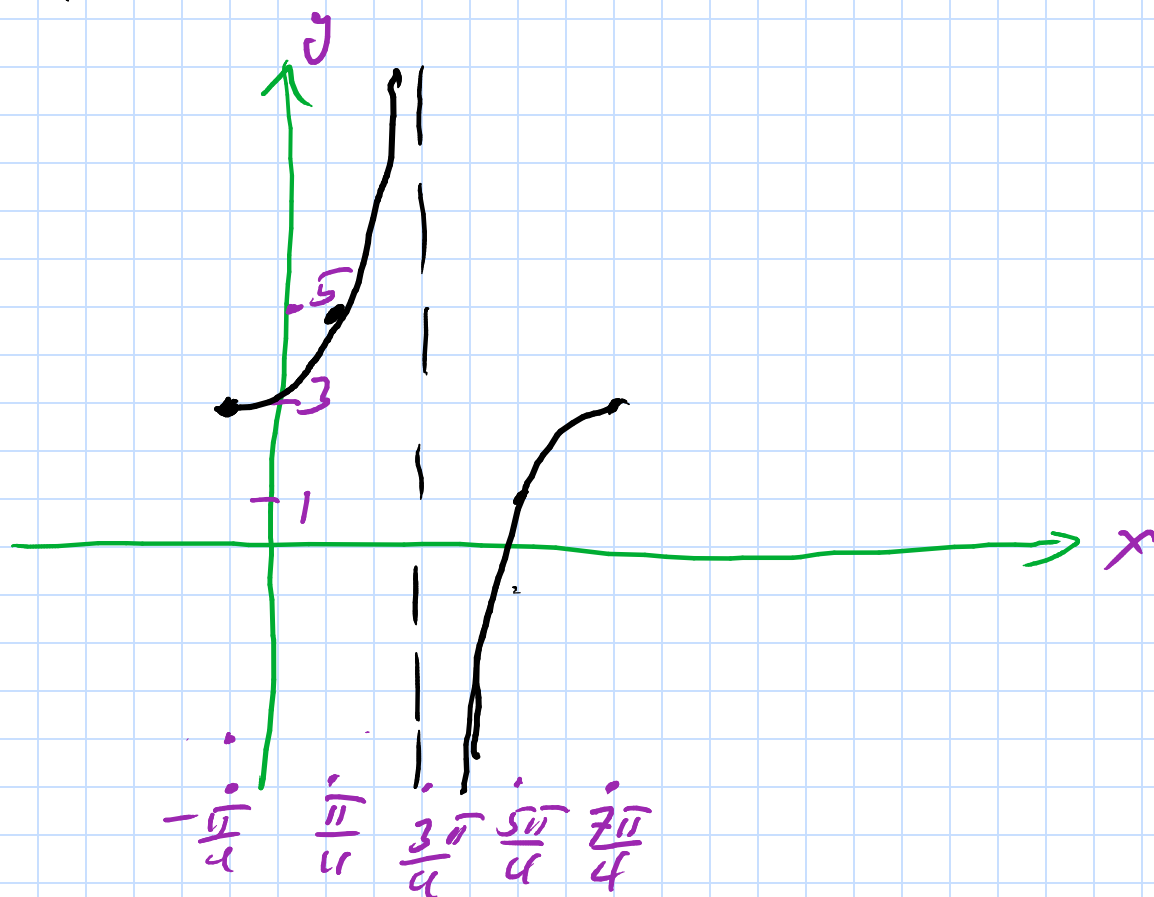


$$3/ \quad y = 3 + 2 \tan \left(\frac{x}{2} + \frac{\pi}{8} \right)$$

$$|A| = \text{none} \quad P = \frac{\pi}{\frac{1}{2}} = 2\pi \quad \phi = -\frac{c}{b} = -\frac{\pi}{4}$$

$$\text{V.T.: } y = 3$$

	X		y
$0 - \frac{\pi}{4}$	$-\frac{\pi}{4}$	$0 + 3$	3
$\frac{\pi}{2} - \frac{\pi}{4}$	$\frac{\pi}{4}$	$2 + 3$	5
π	$\frac{3\pi}{4}$	∞	∞
$\frac{3\pi}{2}$	$\frac{5\pi}{4}$	$-2 + 3$	1
2π	$\frac{7\pi}{4}$	$0 + 3$	3

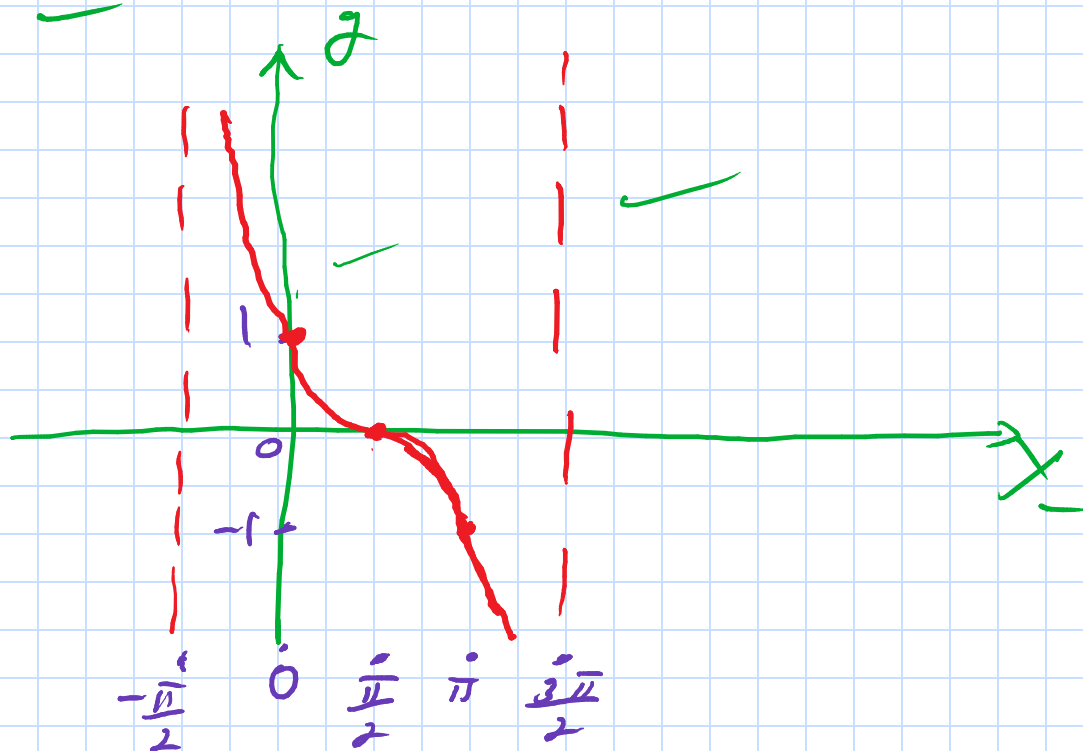


$$4/ \quad y = \cot\left(\frac{1}{2}x + \frac{\pi}{4}\right)$$

$$|A| = \text{none}: \quad P = \frac{\pi}{\omega} = 2\pi \quad \phi = -\frac{\pi}{4} \cdot 2 = -\frac{\pi}{2}$$

$$V.T: y = 0$$

	x	y
$0 - \frac{\pi}{2}$	$-\frac{\pi}{2}$	∞
$\frac{\pi}{2} - \frac{\pi}{2}$	0	1
$\pi - \frac{\pi}{2}$	$\frac{\pi}{2}$	0
$\frac{3\pi}{2}$	π	-1
2π	$\frac{3\pi}{2}$	∞

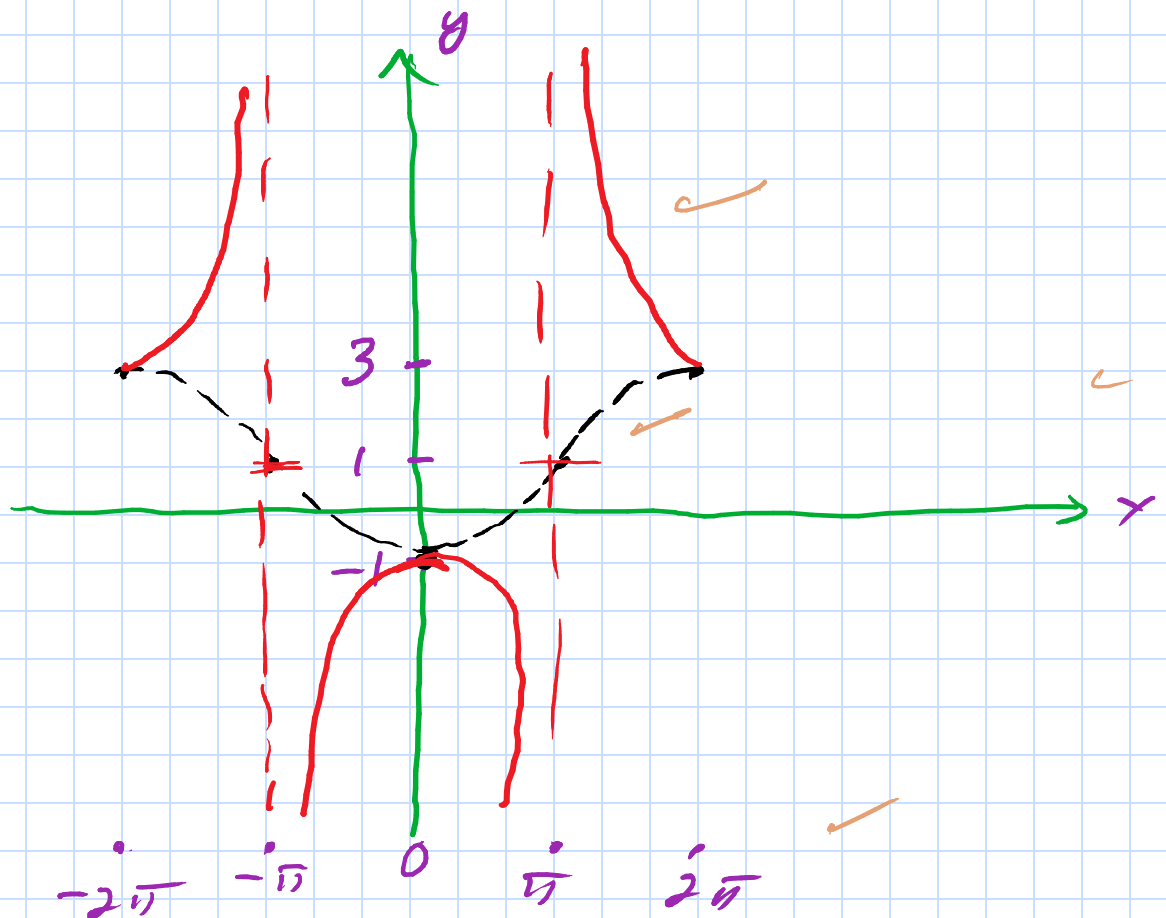


$$5/ \quad y = 2 \sec\left(\frac{1}{2}x + \pi\right) + 1$$

$$|A| = \text{none} \quad P = \frac{2\pi}{B} = 4\pi \quad \phi = -\frac{C}{B} = -2\pi$$

$$\text{VT: } y = 1$$

	x	$y = 2 \cos\left(\frac{1}{2}x + \pi\right) + 1$
$0 - 2\pi$	-2π	$2 + 1 = 3$
$\pi - 2\pi$	$-\pi$	$0 + 1 = 1$
2π	0	$-2 + 1 = -1$
3π	π	$0 + 1 = 1$
4π	2π	$2 + 1 = 3$

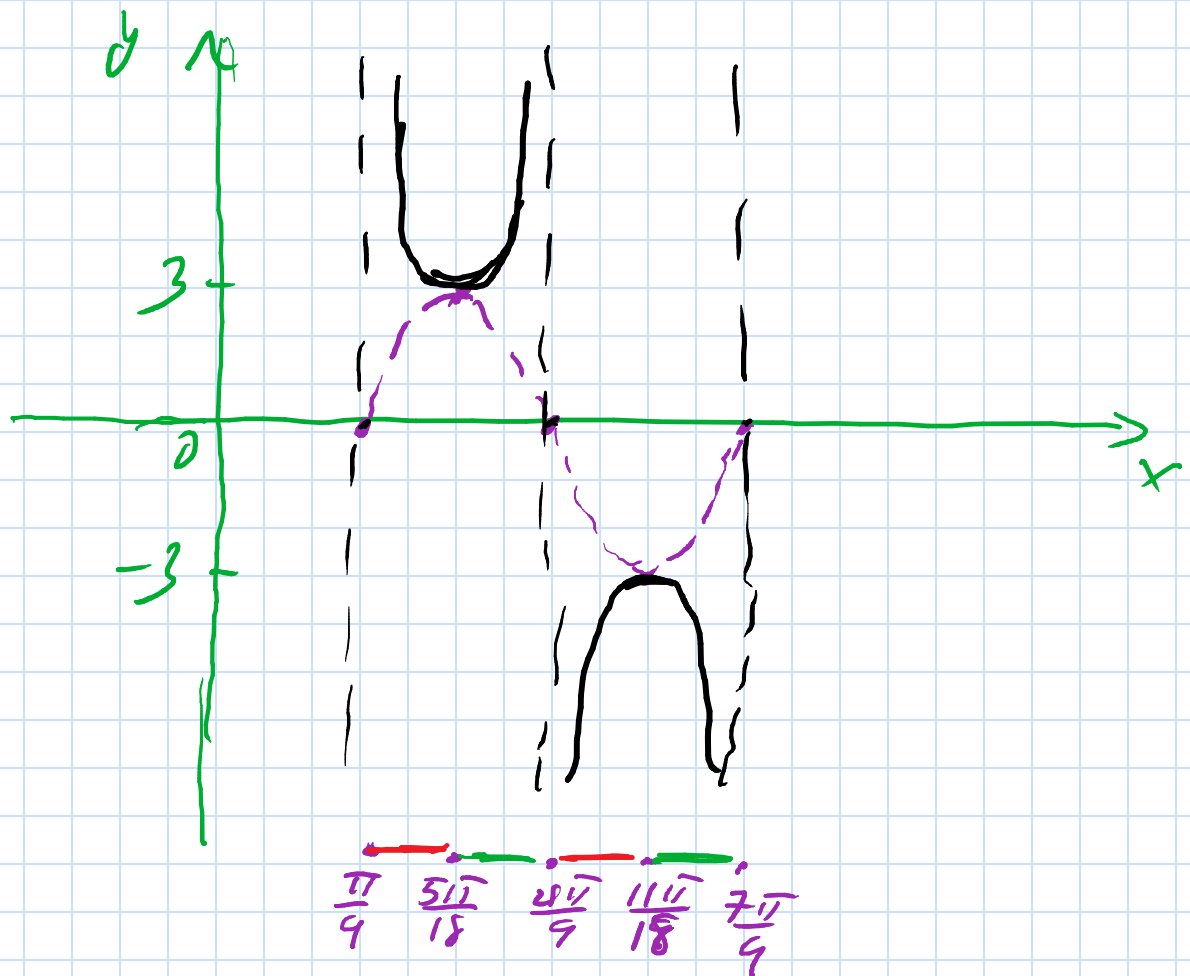


$$6/ \quad y = 3 \cos(3x - \frac{\pi}{3})$$

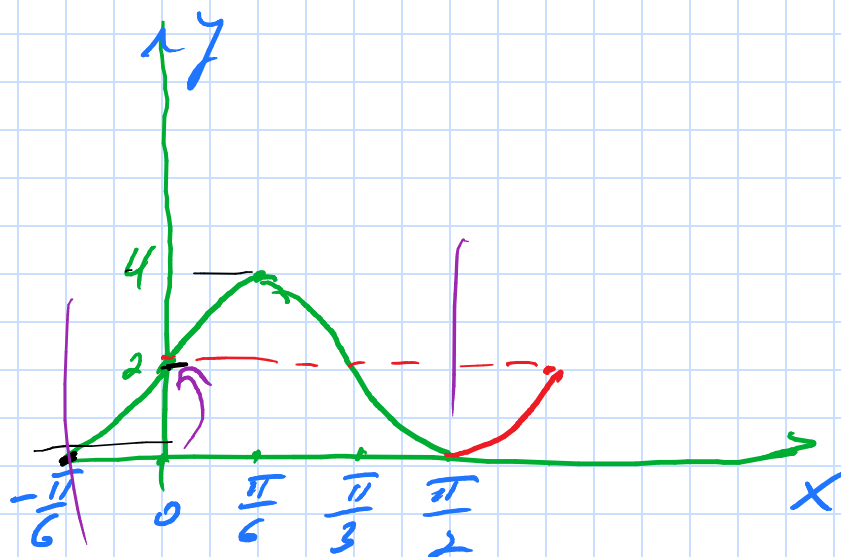
$$|A| = \text{amplitude} \quad P = \frac{2\pi}{3} \quad \phi = -\frac{c}{B} = \frac{\pi}{3} \cdot \frac{1}{3} = \frac{\pi}{9}$$

$$\text{V.T. : } y = 0$$

	x	$y = 3 \sin(3x - \frac{\pi}{3})$
$0 + \frac{\pi}{9}$	$\frac{\pi}{9}$	0
$\frac{\pi}{6} + \frac{\pi}{9}$	$\frac{5\pi}{18}$	3
$\frac{\pi}{3}$	$\frac{4\pi}{9}$	0
$\frac{\pi}{2}$	$\frac{11\pi}{18}$	-3
$\frac{2\pi}{3}$	$\frac{7\pi}{9}$	0



7/



$$|A| = 2$$

$$P = \frac{2\pi}{B} = \frac{\pi}{2} + \frac{\pi}{6} = \frac{2\pi}{3}$$

$$B = 3$$

$$\phi = -\frac{C}{B} = -\frac{\pi}{6}$$

$$C = \frac{\pi}{6} \cdot 3 = \frac{\pi}{2}$$

$$y = D = 2$$

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

$$-\frac{\pi}{6} \leq x \leq \frac{\pi}{2}$$

$$|A| = 2$$

$$P = \frac{2\pi}{B} = \frac{2\pi}{3}$$

$$B = 3$$

$$C = 0$$

$$D = 2$$

$$y = 2 \sin(3x) + 2$$

$$-\frac{\pi}{6} \leq x \leq \frac{\pi}{2}$$