

4.5 day 1 ex 1,2,3

1/7/2020

○ Goal: Be able to graph any tangent or cotangent graph.

Tangent: $y = a \tan(bx + c) + d$

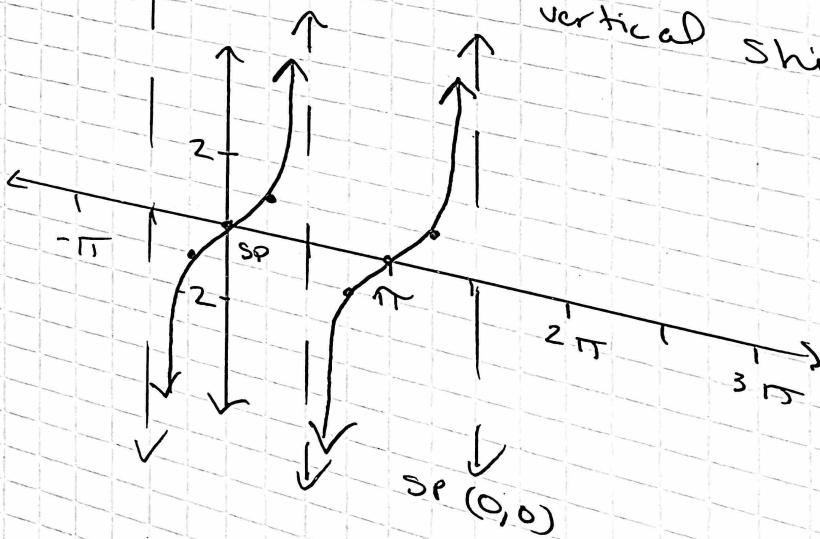
Period: $\frac{\pi}{|b|}$

horizontal distance between asymptotes

a: vertical stretch/shrink ~ vertical distance between
midline & critical points

$-\frac{c}{b}$ = phase shift (middle of asymptotes)

d = midline ~ vertical shift



to graph:

① Find the period $\frac{\pi}{|b|}$

② Find the CPS $\frac{\text{Per}}{4}$

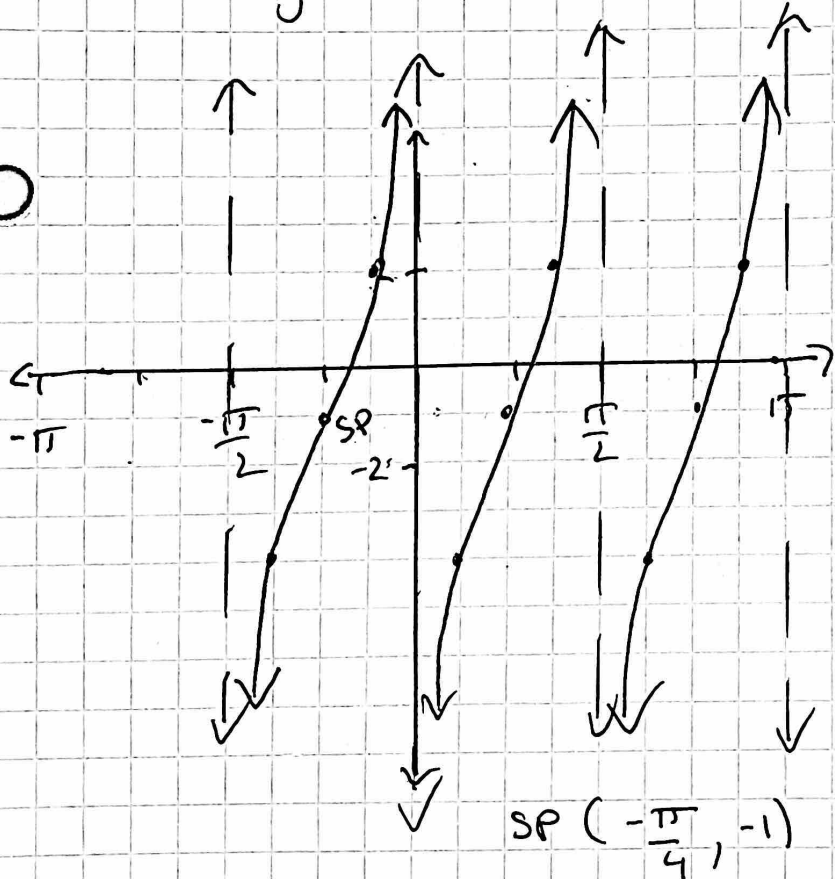
③ Find the asymptotes

$$bx+c = -\frac{\pi}{2}$$

$$bx+c = \frac{\pi}{2}$$

④ starting point $(-\frac{c}{b}, d)$ ~ in the middle of the asymptotes on the mid line

ex) $y = 3 \tan(2x + \frac{\pi}{2}) - 1$



$$\text{per} = \frac{\pi}{2}$$

$$\text{CPS} \cdot \frac{\pi}{2} = \frac{\pi}{2} \left(\frac{1}{4}\right)$$
$$= \frac{\pi}{8}$$

$$2x + \frac{\pi}{2} = -\frac{\pi}{2}$$

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

$$2x = -\pi$$

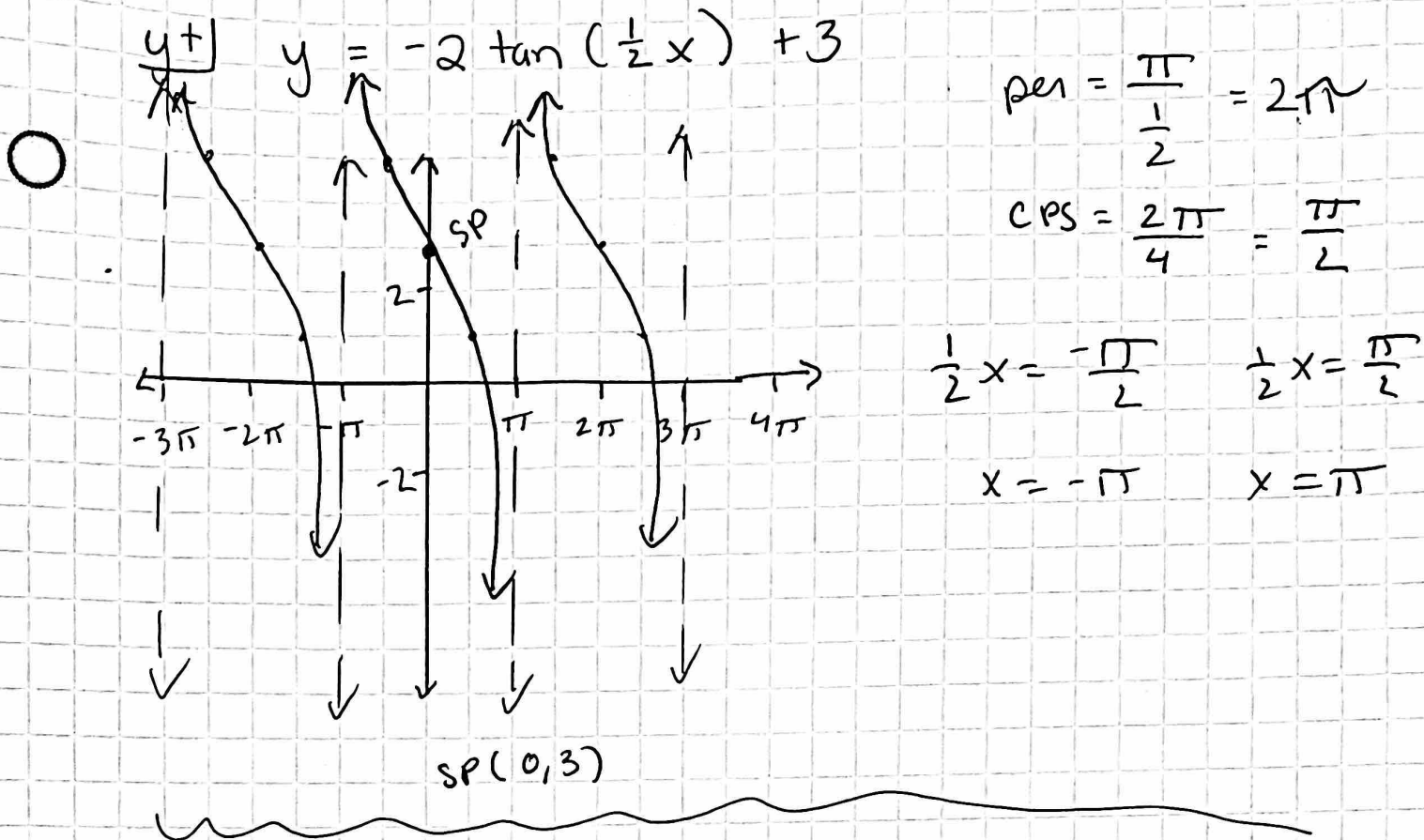
$$2x = 0$$

$$x = -\frac{\pi}{2}$$

$$x = 0$$

$$\text{SP} = \left(-\frac{\pi/2}{2}, -1\right)$$

$$\left(-\frac{\pi}{4}, -1\right)$$



cotangent ☺

○

$y = a \cot(bx+c) + d$

starting pt = $x = -\frac{c}{b}$

asymptotes:

$bx+c = 0$

$bx+c = \pi$

