Math 112: #9 A/B

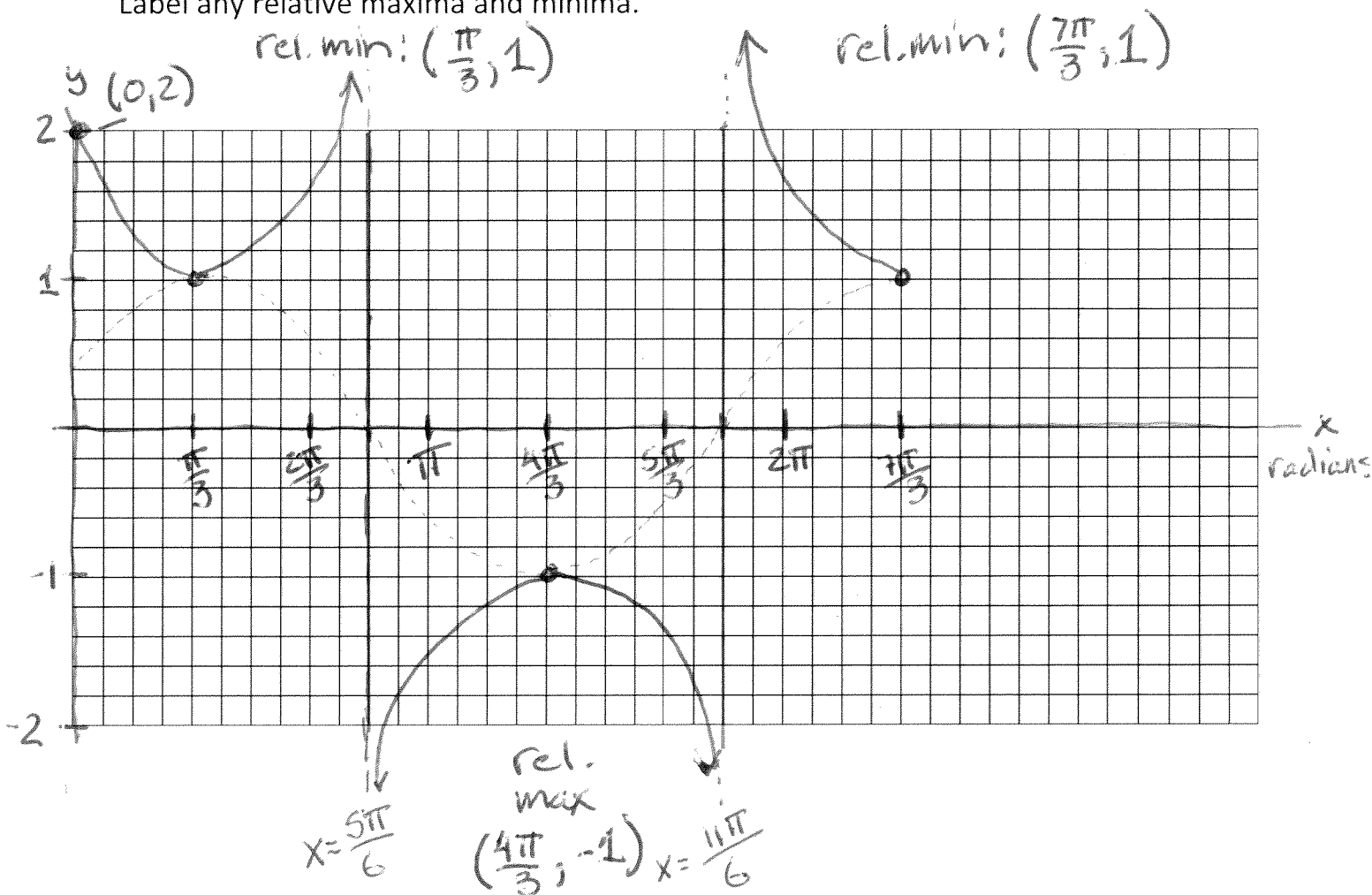**A)** (**No calculator**) Graph, by hand, one full period of the function:

$$f(x) = \sec(x - \frac{\pi}{3})$$

amp = 1
period = 2π

Phase Shift = $\frac{\pi}{3}$ right

Label the y-intercept and the two asymptotes that are in the center of the graph.
Label any relative maxima and minima.

rel. min: $(\frac{\pi}{3}, 1)$ rel.min: $(\frac{7\pi}{3}, 1)$

y $(0,2)$

$x \approx \frac{5\pi}{6}$

rel. max
$(\frac{4\pi}{3}, -1)$ $x = \frac{11\pi}{6}$

$y\text{-int} = \sec(0 - \frac{\pi}{3})$

$= \sec(-\frac{\pi}{3}) = \frac{1}{\cos -\frac{\pi}{3}} = \frac{1}{\frac{1}{2}} = 2$

B. (No calculator) Graph, by hand, one full period of the function:

$$f(x) = 1 - 3\sin 2\left(x - \frac{\pi}{6}\right)$$

V. shift: up 1

Flip upside down

amp = 3

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

H. shift: left $\frac{\pi}{6}$

Label the y-intercept and any zeros. Label any relative maxima and minima.

zero y-int: $1 - 3\sin\left(-\frac{2\pi}{6}\right)$

$1 - 3\left(-\frac{\sqrt{3}}{2}\right)$

$1 + \frac{3\sqrt{3}}{2} \approx 3.6$

zero $\approx \frac{5\pi}{24}$ $\approx \frac{15\pi}{24}$