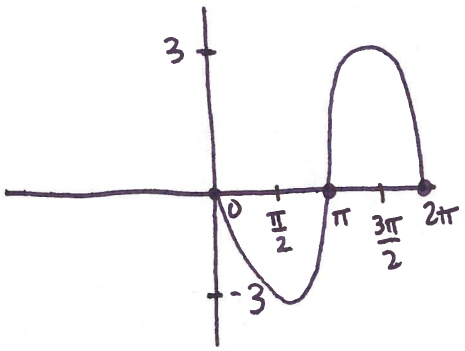
§8.1 #8 Plot $y = (-3)\sin(x)$.

(mult. y-vals by -3)

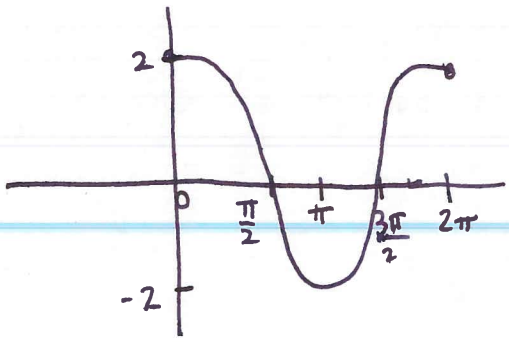
Soln: Anchor pts for sine: $0, \frac{\pi}{2}, \pi, \frac{3\pi}{2}, 2\pi$



§8.1 #10 Plot $f(x) = (2)\cos(x)$

(mult. y-vals by 2)

Soln: Anchor points: $0, \frac{\pi}{2}, \pi, \frac{3\pi}{2}, 2\pi$



§8.1 #12 Plot $f(x) = 2\sin(\frac{1}{2}x)$

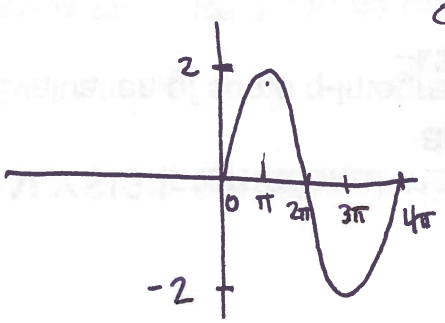
↑ mult. y by 2

↑ divide x by $\frac{1}{2}$ ~ same as multiply x by 2

Soln: Anchor points: $0, \frac{\pi}{2}, \pi, \frac{3\pi}{2}, 2\pi$

↓ mult. by 2 // divide by $\frac{1}{2}$

$0, \pi, 2\pi, 3\pi, 4\pi$



§8.1 #18 Plot $f(t) = 2\sin\left(t - \frac{5\pi}{6}\right)$

↑ mult. y-vals by 2 ↑ add $\frac{5\pi}{6}$ to x-vals

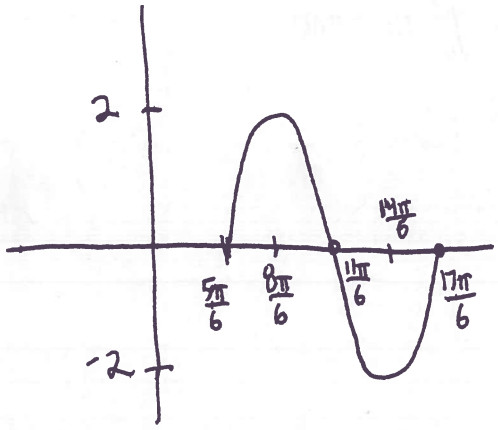
$\frac{\pi}{2} + \frac{5\pi}{6} = \frac{3\pi}{6} + \frac{5\pi}{6} = \frac{8\pi}{6}$

$\pi + \frac{5\pi}{6} = \frac{6\pi}{6} + \frac{5\pi}{6} = \frac{11\pi}{6}$

Soln: Anchor pts: $0, \frac{\pi}{2}, \pi, \frac{3\pi}{2}, 2\pi$

↓ add $\frac{5\pi}{6}$

$\frac{5\pi}{6}, \frac{8\pi}{6}, \frac{11\pi}{6}, \frac{14\pi}{6}, \frac{17\pi}{6}$



§8.1 #20 Plot $f(t) = 4\cos\left(2\left(t + \frac{\pi}{4}\right)\right) - 3$

↑ mult y-vals by 4 (3rd) ↑ divide t-vals by 2 (2nd) ↑ subtract $\frac{\pi}{4}$ from t-vals (1st) ↖ subtr. 3 from y-vals (4th)

Soln: Anchor pts: $0, \frac{\pi}{2}, \pi, \frac{3\pi}{2}, 2\pi$

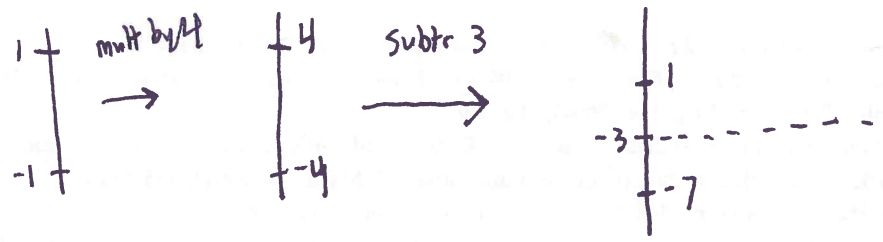
↓ subtract $\frac{\pi}{4}$

$-\frac{\pi}{4}, \frac{\pi}{4}, \frac{3\pi}{4}, \frac{5\pi}{4}, \frac{7\pi}{4}$

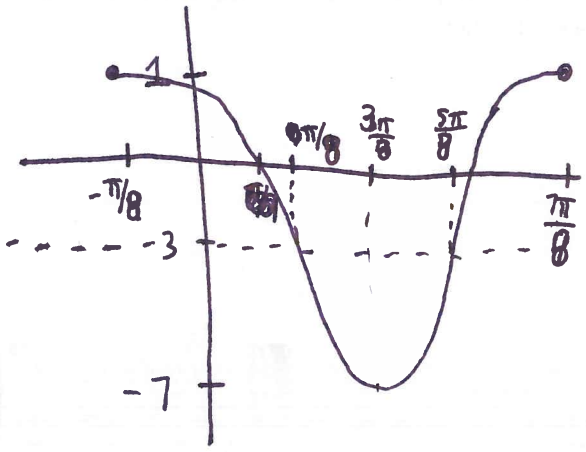
↓ div by 2

$-\frac{\pi}{8}, \frac{\pi}{8}, \frac{3\pi}{8}, \frac{5\pi}{8}, \frac{7\pi}{8}$

#20 continued



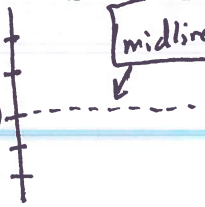
Now plot:



§8.1 #23

Recall: $A\sin(Bx)+C$ has period $\frac{2\pi}{B}$

max height at -1
min height at -5



midline at -3 $\Rightarrow$ C = -3

Amplitude: $A = 2$

One period of sine starting at $x=1$ ends at $x=3$

$\Rightarrow$ period is

$\text{Per} = 3-1 = 2$

So period $= 2 = \frac{2\pi}{B} \Rightarrow B = \pi$

Thus this is plot of

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

§8.2 #23 Plot $p(x) = \tan\left(x - \frac{\pi}{2}\right)$

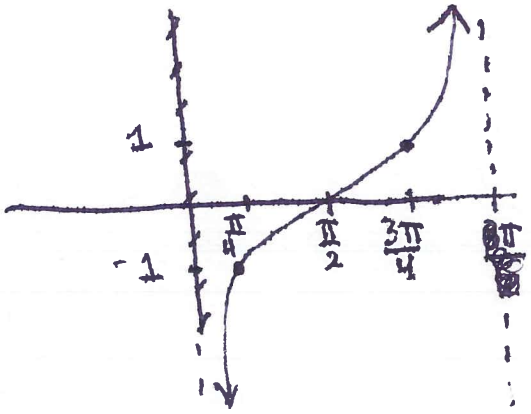
↑ add $\frac{\pi}{2}$ to anchor pts

Soln: Anchor pts: asymptotes

$-\frac{\pi}{2}, -\frac{\pi}{4}, 0, \frac{\pi}{4}, \frac{\pi}{2}$

↓ add $\frac{\pi}{2}$

$0, \frac{\pi}{4}, \frac{\pi}{2}, \frac{3\pi}{4}, \pi$



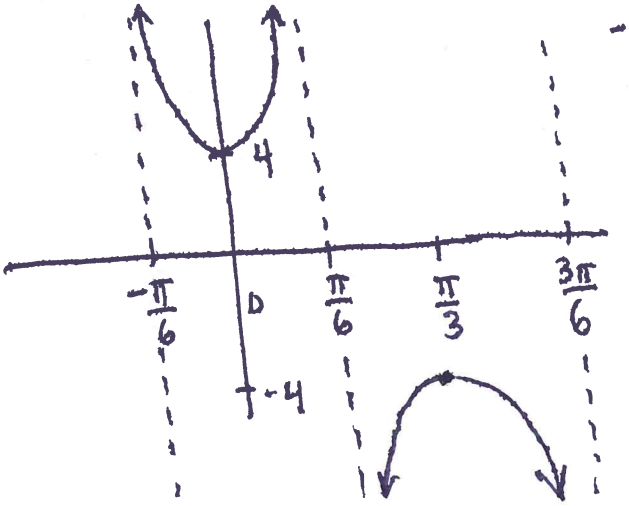
§8.2 #29 Plot $f(x) = 4\sec(3x)$

Soln: Anchor pts: asymptotes

$-\frac{\pi}{2}, 0, \frac{\pi}{2}, \pi, \frac{3\pi}{2}$

↓ divide by 3

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



§8.2 #33 Plot $f(x) = 2\csc\left(x + \frac{\pi}{4}\right) - 1$.

- 2: mult. y-vals by 2 (2nd)
- $+\frac{\pi}{4}$: subtr $\frac{\pi}{4}$ from x-vals (1st)
- -1: subtr 1 from y-vals (3rd)

Soln: Anchor pts: $0, \frac{\pi}{2}, \pi, \frac{3\pi}{2}, 2\pi$ (asymptotes)

↓ subtr $\frac{\pi}{4}$

$$-\frac{\pi}{4}, \frac{\pi}{4}, \frac{3\pi}{4}, \frac{5\pi}{4}, \frac{7\pi}{4}$$