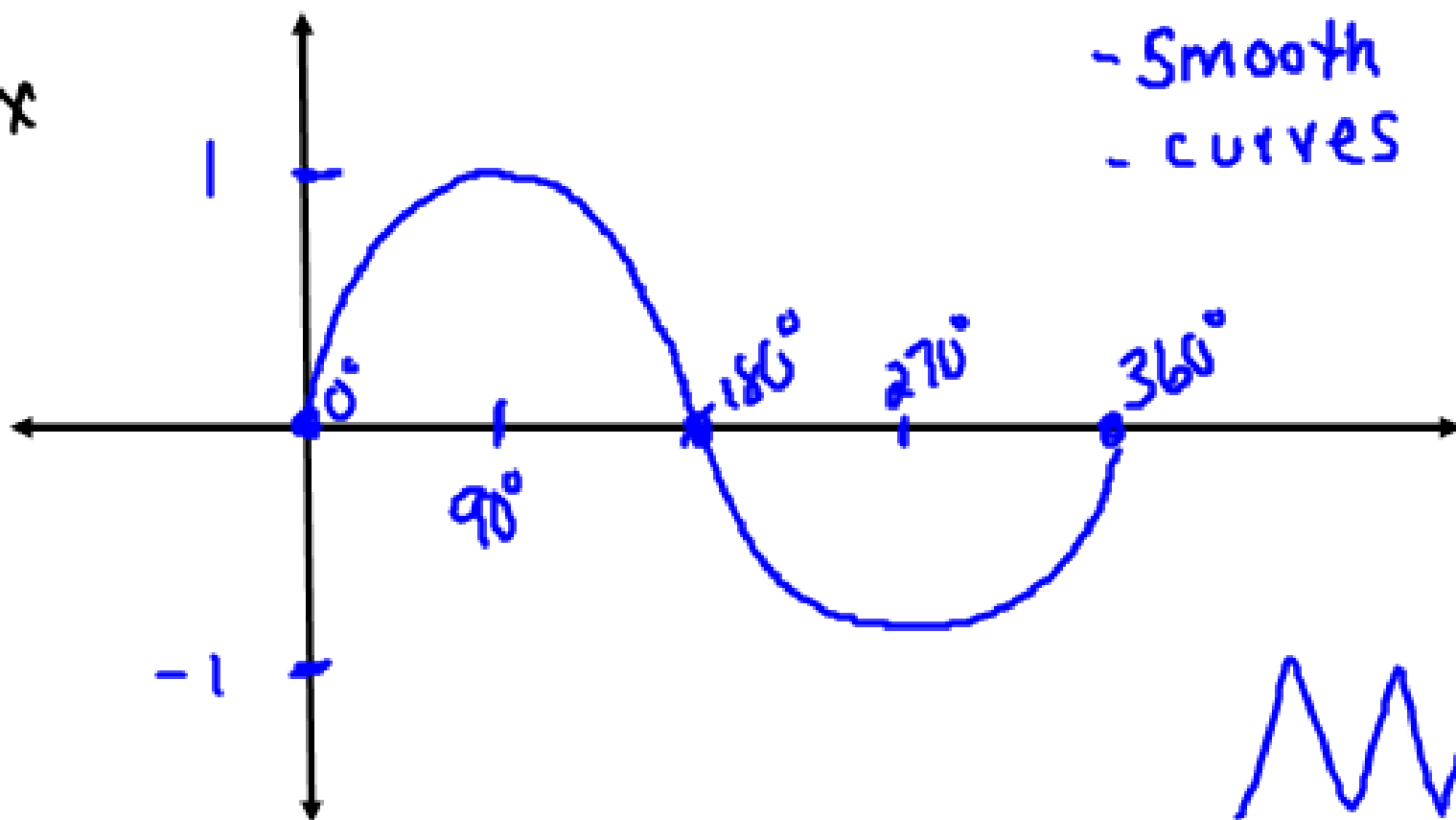


$$D: \{x \mid x \in \mathbb{R}\}$$

$$R: \{y \mid -1 \leq y \leq 1\}$$



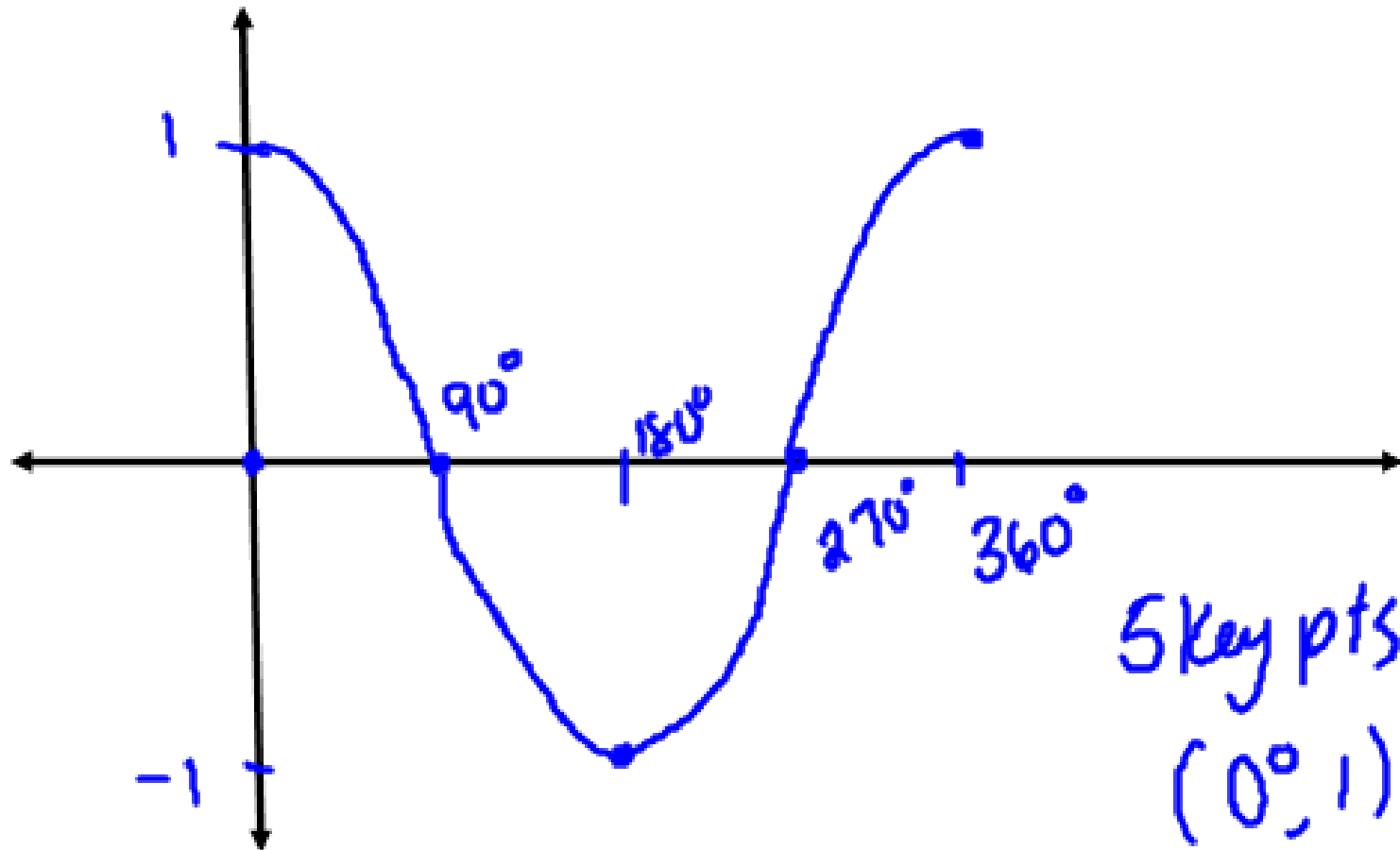
$$y = \sin x$$



5 key points

- $(0^\circ, 0)$
- $(90^\circ, 1)$
- $(180^\circ, 0)$
- $(270^\circ, -1)$
- $(360^\circ, 0)$

$$y = \cos x$$



5 Key pts

$(0^\circ, 1)$

$(90^\circ, 0)$

$(180^\circ, -1)$

$(270^\circ, 0)$

$(360^\circ, 1)$

$$y = a \cdot f(b(x-h)) + k$$

$$y = a \sin(\underline{b(x-c)}) + \underline{d}$$

Transformation	Part of graph that is affected	
Vertical Stretch: a	Amplitude	Range
Vertical Translation: d	SA	Range
Horizontal Stretch: $1/b$	Period	Domain
Horizontal Translation: c	x-int, starting	Domain
Reflection: $a < 0$ x-axis	local max became local min min	local min became local max max

Example: List the transformations, amplitude, equation of the sinusoidal axis and period for $y = 2\sin(x + 45^\circ) - 3$. Graph and check your answer using Desmos.

Vertical Stretch: 2

Amplitude: 2

Vertical Translation: -3

Equation of S.A.: $y = -3$

Horizontal Stretch: 1

Period: 360°

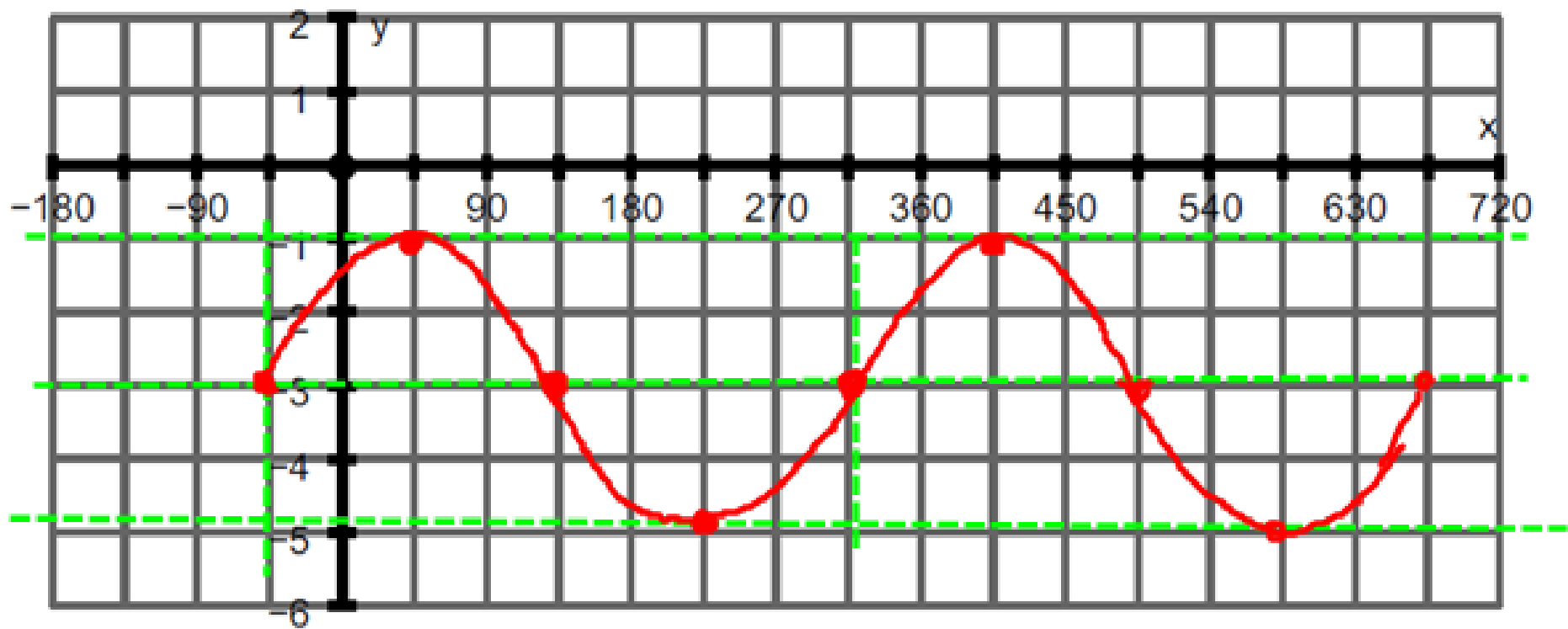
$$\text{Period} = \text{HS} \times 360^\circ$$

Horizontal Translation: -45°

$$\text{HS} = \frac{P}{360^\circ}$$

$$\text{Period} = \text{HS} \times 2\pi$$

$$(x, y) \rightarrow (x - 45^\circ, 2y - 3)$$



HW: pg 233 (chs.1)

4-9

pg 250 # 4.5 (chs.2)