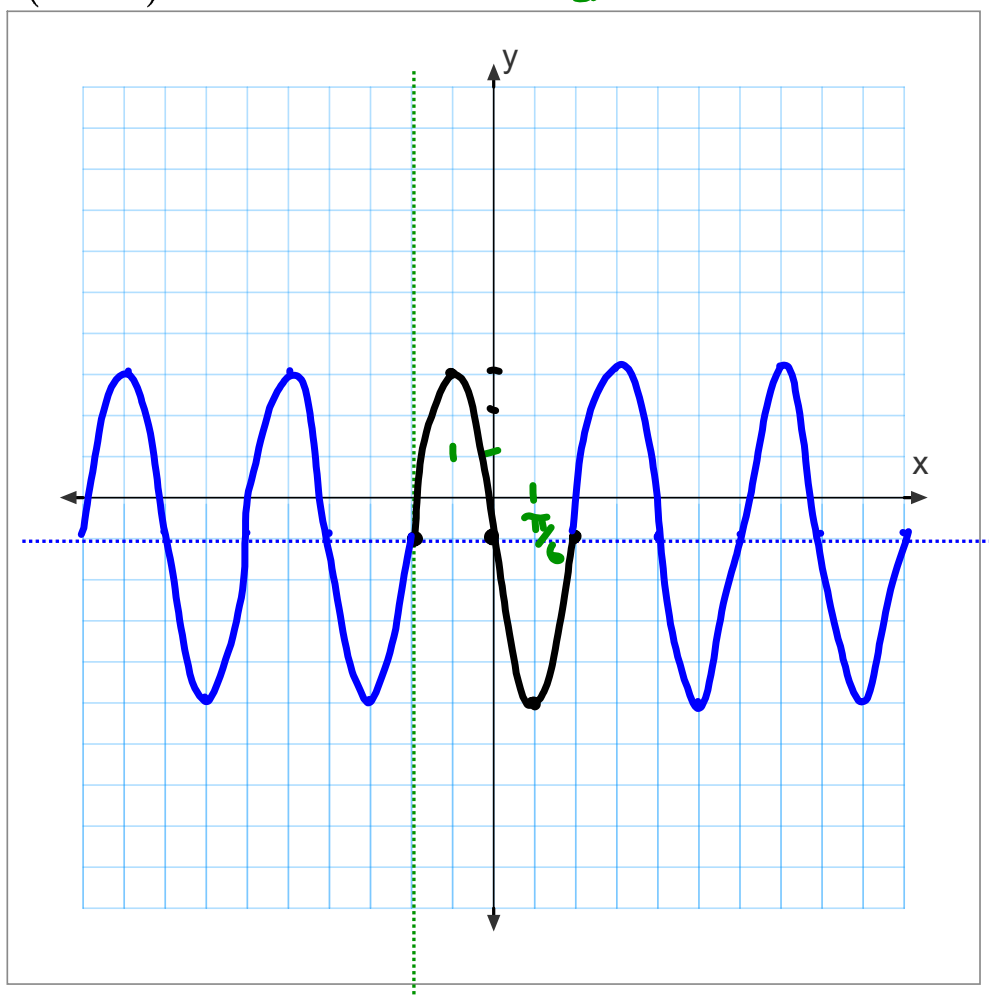
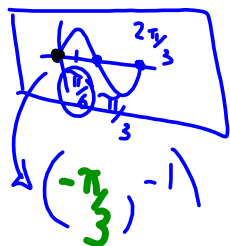


2. $f(x) = 4 \sin(3x + \pi) - 1$ not standard $(b(x-h))$
 $3(x + \frac{\pi}{3}) \therefore h = -\frac{\pi}{3}$

$a = 4$ $k = -1$
 $A = 4$
 $\text{max} = -1 + 4 = 3$
 $\text{min} = -1 - 4 = -5$

$b = 3$ $p = \frac{2\pi}{3}$



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

$$a = -3 \Rightarrow A = 3$$

$$k = -2$$

$$\therefore \max = -2 + 3 = 1$$

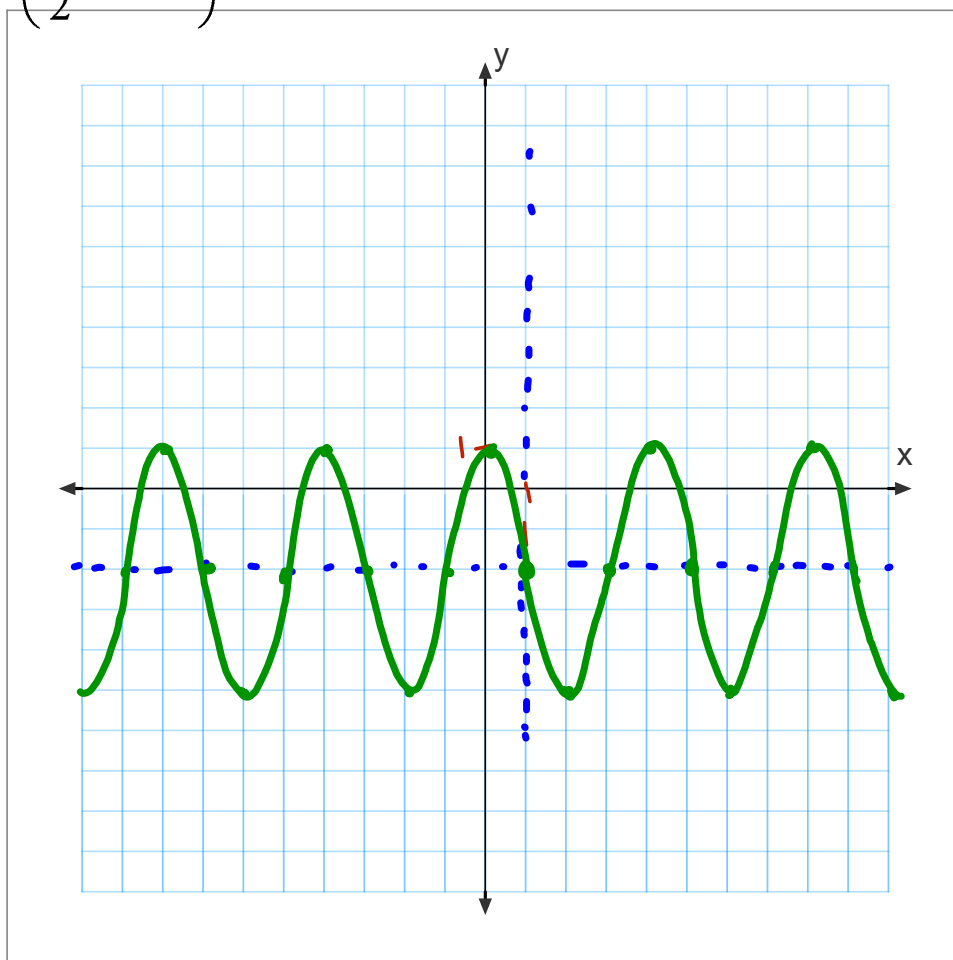
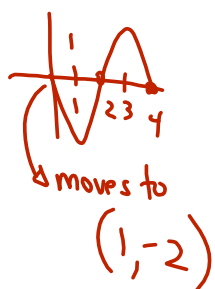
$$\min = -2 - 3 = -5$$

$$b = \frac{\pi}{2} \quad p = 2\pi \div \frac{\pi}{2}$$

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

$$= 4$$

a^-, b^+

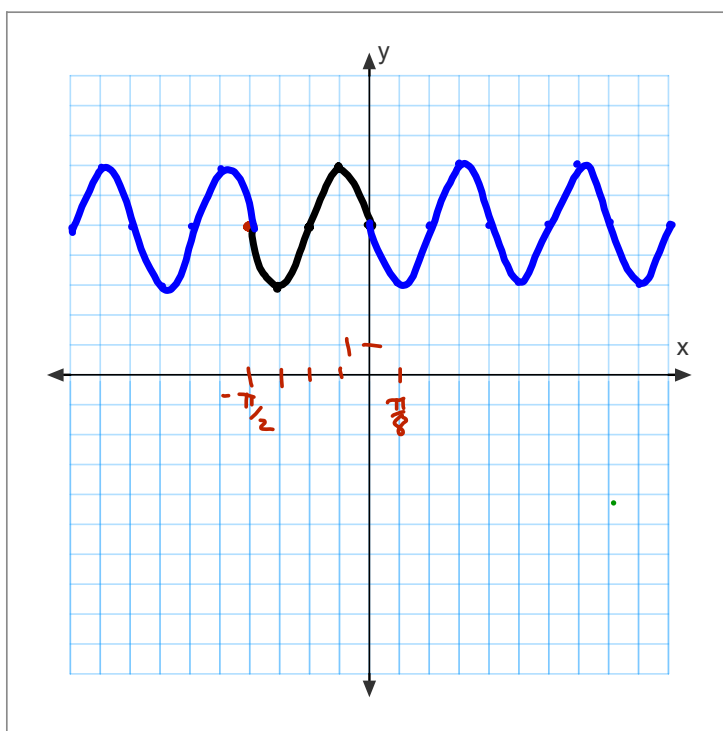
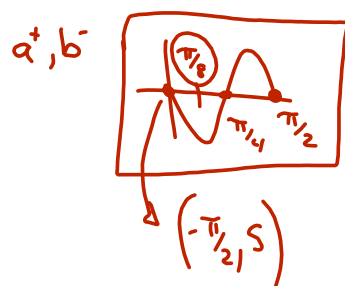


$$f(x) = 2 \sin\left(-4\left(x + \frac{\pi}{2}\right)\right) + 5$$

$$a = 2 \quad A = 2$$

$$k = 5 \quad \therefore \begin{array}{l} \text{max} = 7 \\ \text{min} = 3 \end{array}$$

$$b = -4 \quad p = \frac{2\pi}{4} = \frac{\pi}{2}$$



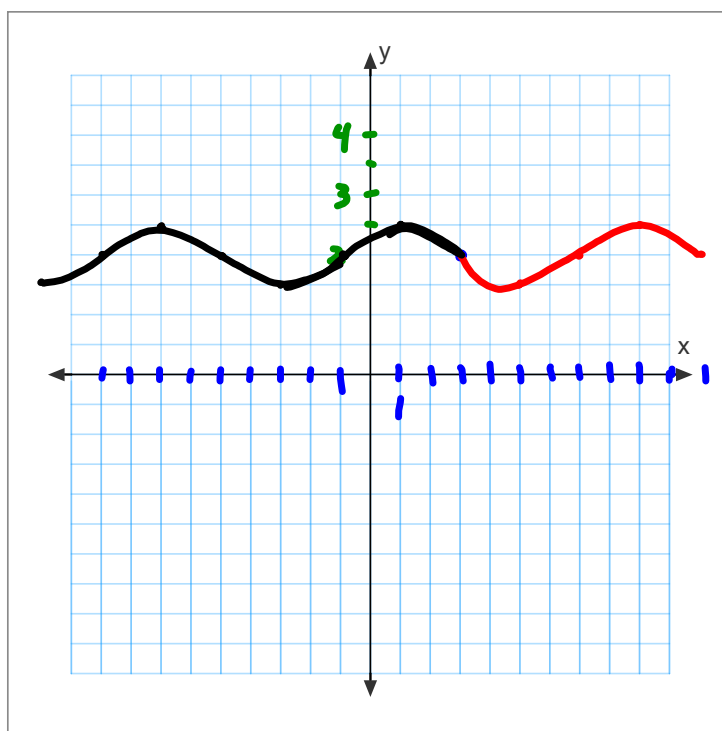
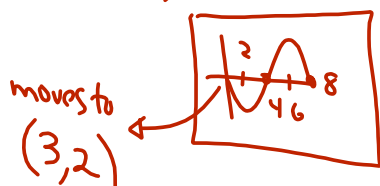
$$y = -\frac{1}{2} \sin\left(\frac{\pi}{4}(x-3)\right) + 2$$

$$a = -\frac{1}{2} \Rightarrow A = \frac{1}{2}$$

$$k = 2 \quad \therefore \begin{array}{l} \text{max} = 2.5 \\ \text{min} = 1.5 \end{array}$$

$$b = \frac{\pi}{4} \Rightarrow p = 2\pi \cdot \frac{1}{\pi} = 8$$

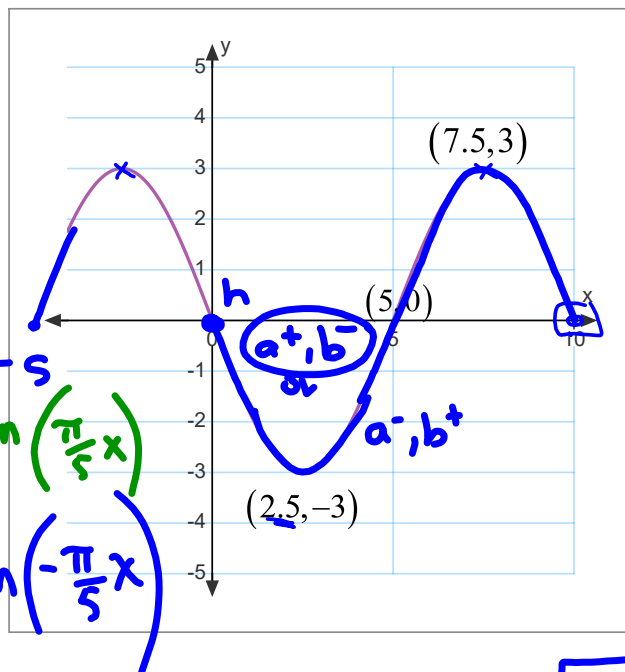
a, b^+



Work Book: Page 219, Question 5
Page 222, Questions 8 & 9

Finding the Rule

Example:



$f(x) = -3 \sin\left(\frac{\pi}{5}x\right)$
 OR
 $f(x) = 3 \sin\left(-\frac{\pi}{5}x\right)$

$$A = \frac{\text{max} - \text{min}}{2}$$

$$A = \frac{3 - (-3)}{2} = \frac{6}{2}$$

$$A = 3$$

$$\therefore a = \pm 3$$

$$b = \frac{2\pi}{p}$$

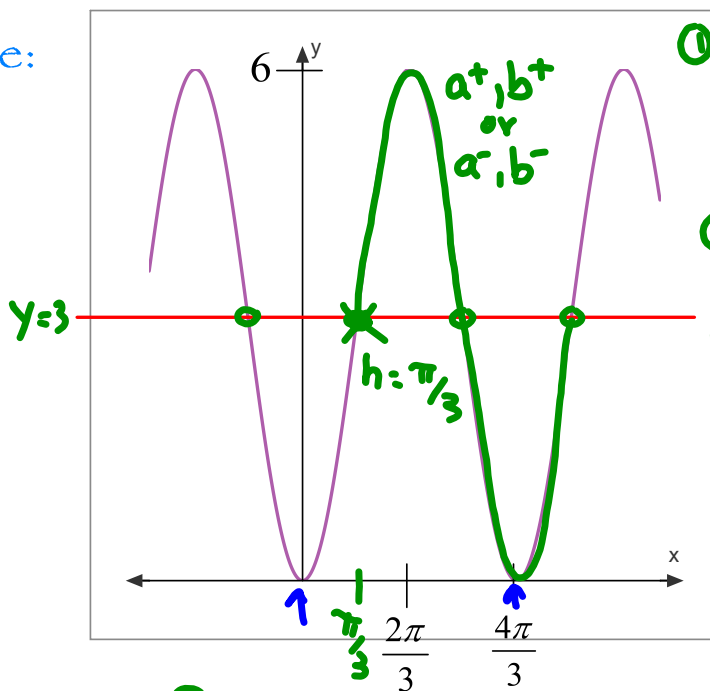
$$p = 10$$

$$b = \frac{2\pi}{10}$$

$$b = \pm \frac{\pi}{5}$$

$$k = \text{max} - A \text{ or } k = \text{min} + A \text{ or } k = \frac{\text{max} + \text{min}}{2} \quad \boxed{k=0} \quad h = 5 \text{ or } 0 \text{ or } 10 \text{ or } -5 \text{ or } \dots$$

Example:



$$\textcircled{1} A = \frac{6-0}{2} = 3$$

$$a = \pm 3$$

$$\textcircled{2} k = \frac{6+0}{2} = 3$$

$$\textcircled{3} p = \frac{4\pi}{3}$$

$$b = 2\pi \cdot \frac{3}{4\pi} = \frac{3}{2}$$

$$1.5$$

$$\therefore b = \pm \frac{3}{2}$$

$$= \pm 1.5$$

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