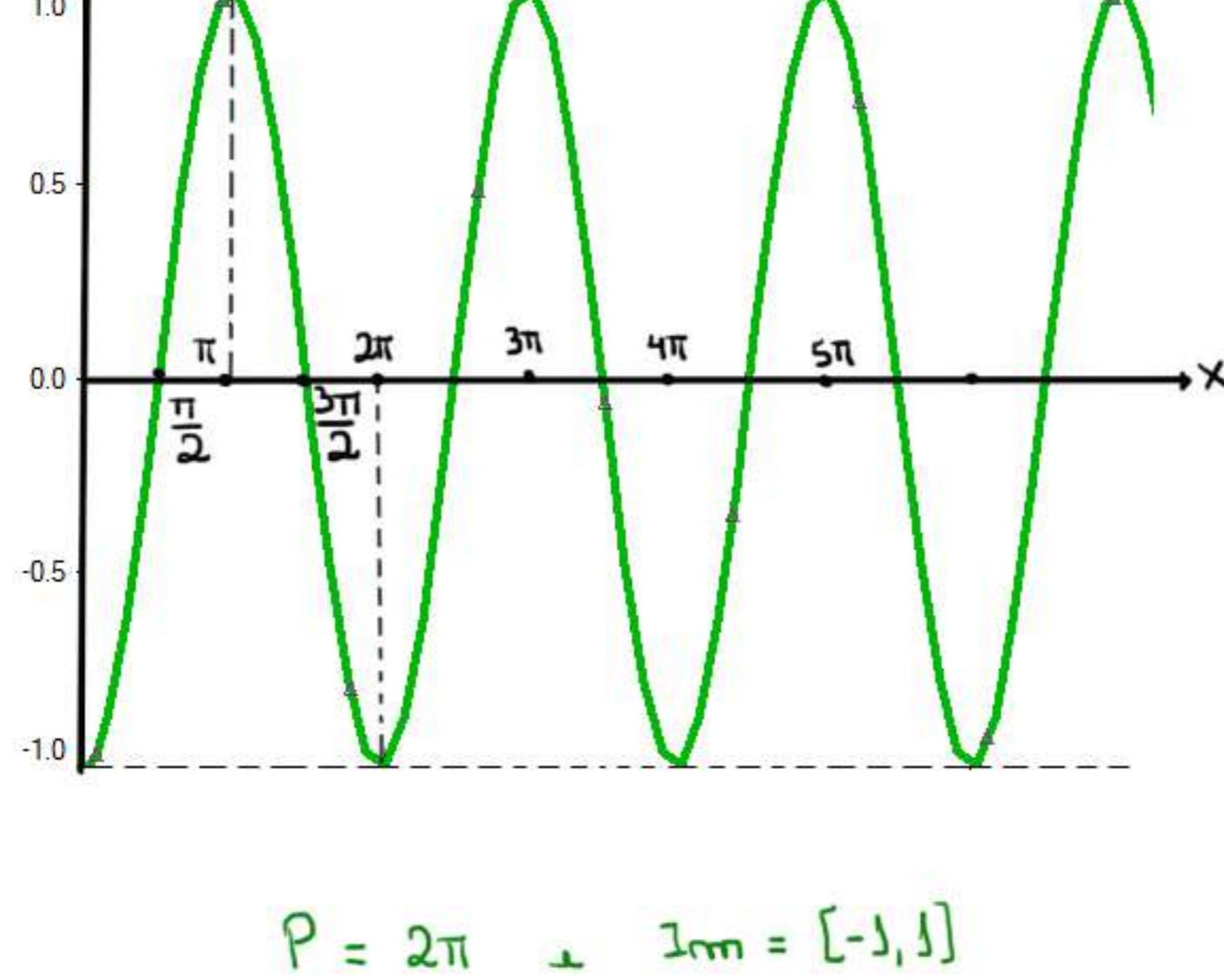


Determine o período e a imagem e faça o gráfico de um período completo das funções abaixo:

1. $f: \mathbb{R} \rightarrow \mathbb{R}$ dada por $f(x) = -\cos x$.

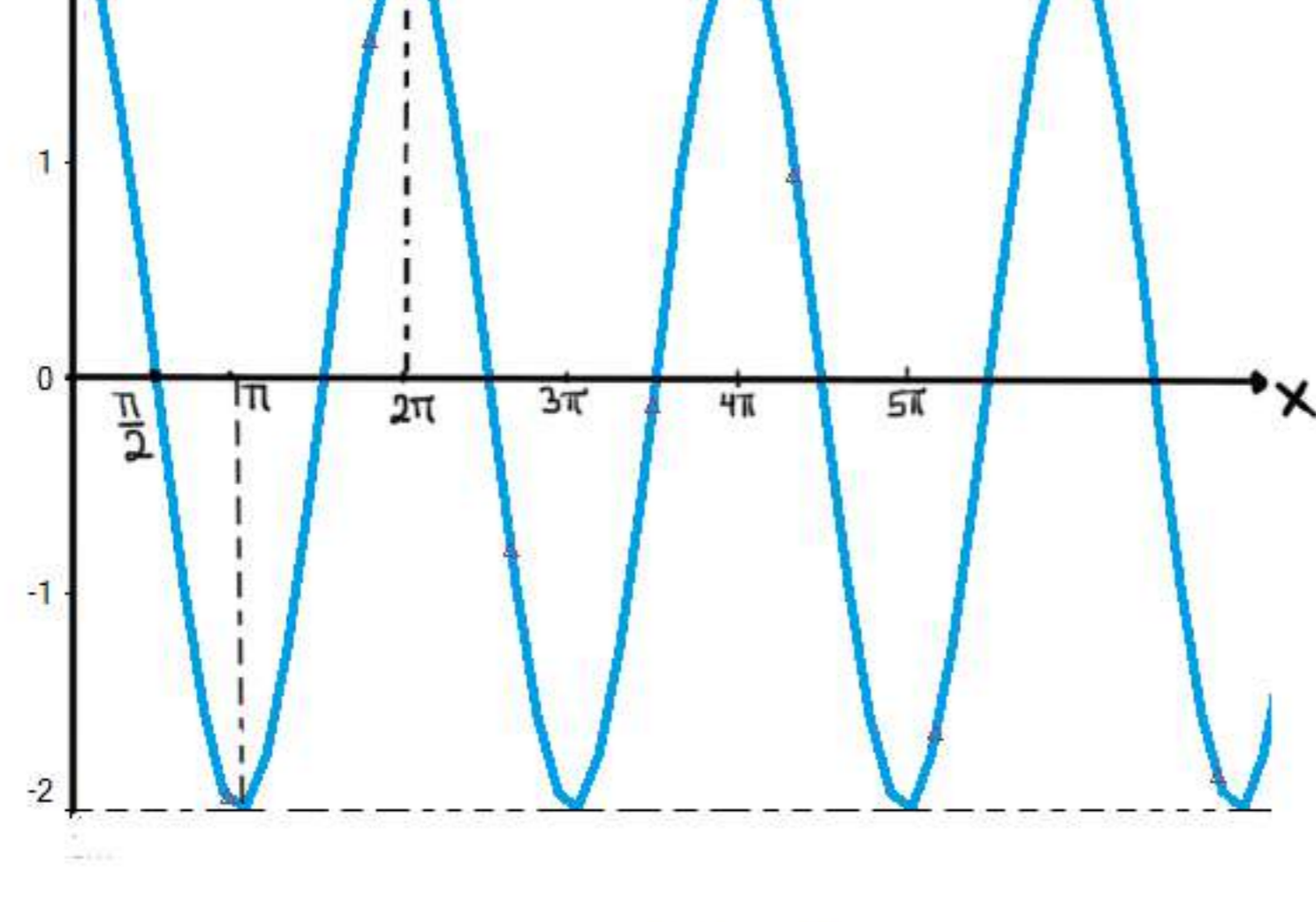
$f(x) = -1 \cdot \cos x \rightarrow P = \frac{2\pi}{1} = 2\pi$
 $\rightarrow Im = [-1, 1]$



$P = 2\pi$ e $Im = [-1, 1]$

2. $f: \mathbb{R} \rightarrow \mathbb{R}$ dada por $f(x) = 2 \cdot \cos x$.

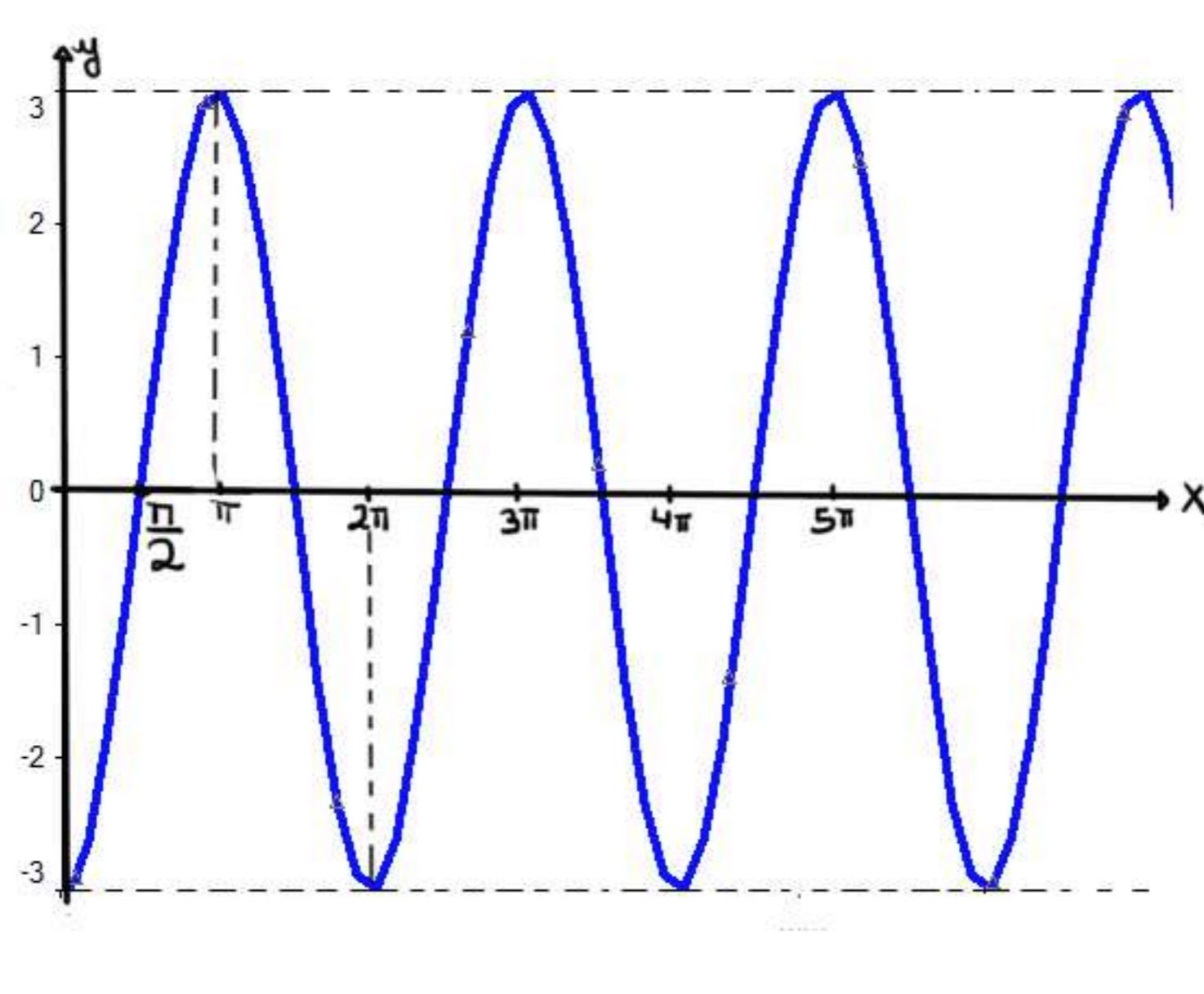
$f(x) = 2 \cdot \cos x \rightarrow P = \frac{2\pi}{1} = 2\pi$
 $\rightarrow Im = [-2, 2]$



$P = 2\pi$ e $Im = [-2, 2]$

3. $f: \mathbb{R} \rightarrow \mathbb{R}$ dada por $f(x) = -3 \cdot \cos x$.

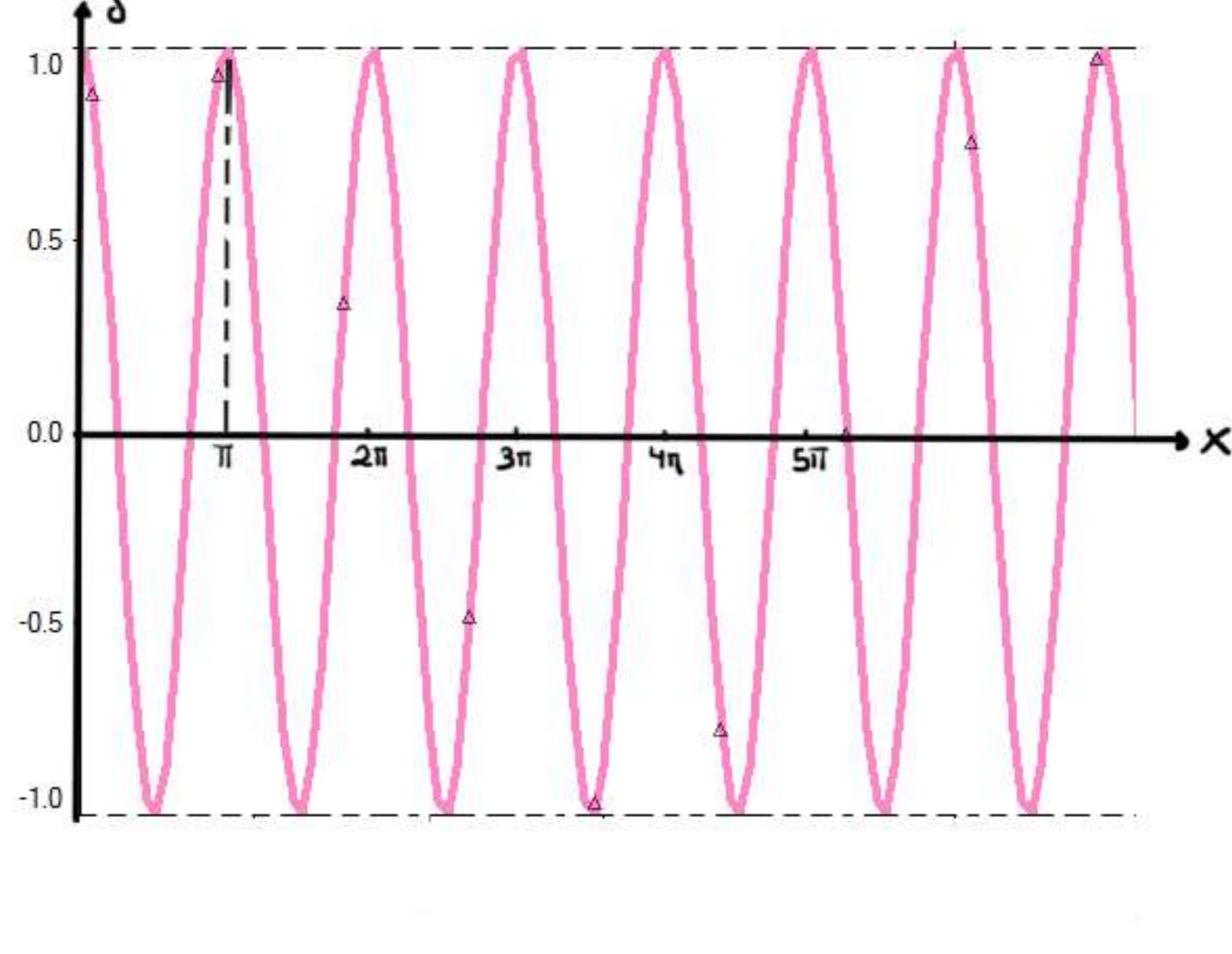
$f(x) = -3 \cdot \cos x \rightarrow P = 2\pi$
 $\rightarrow Im = [-3, 3]$



$P = 2\pi$ e $Im = [-3, 3]$

4. $f: \mathbb{R} \rightarrow \mathbb{R}$ dada por $f(x) = \cos 2x$.

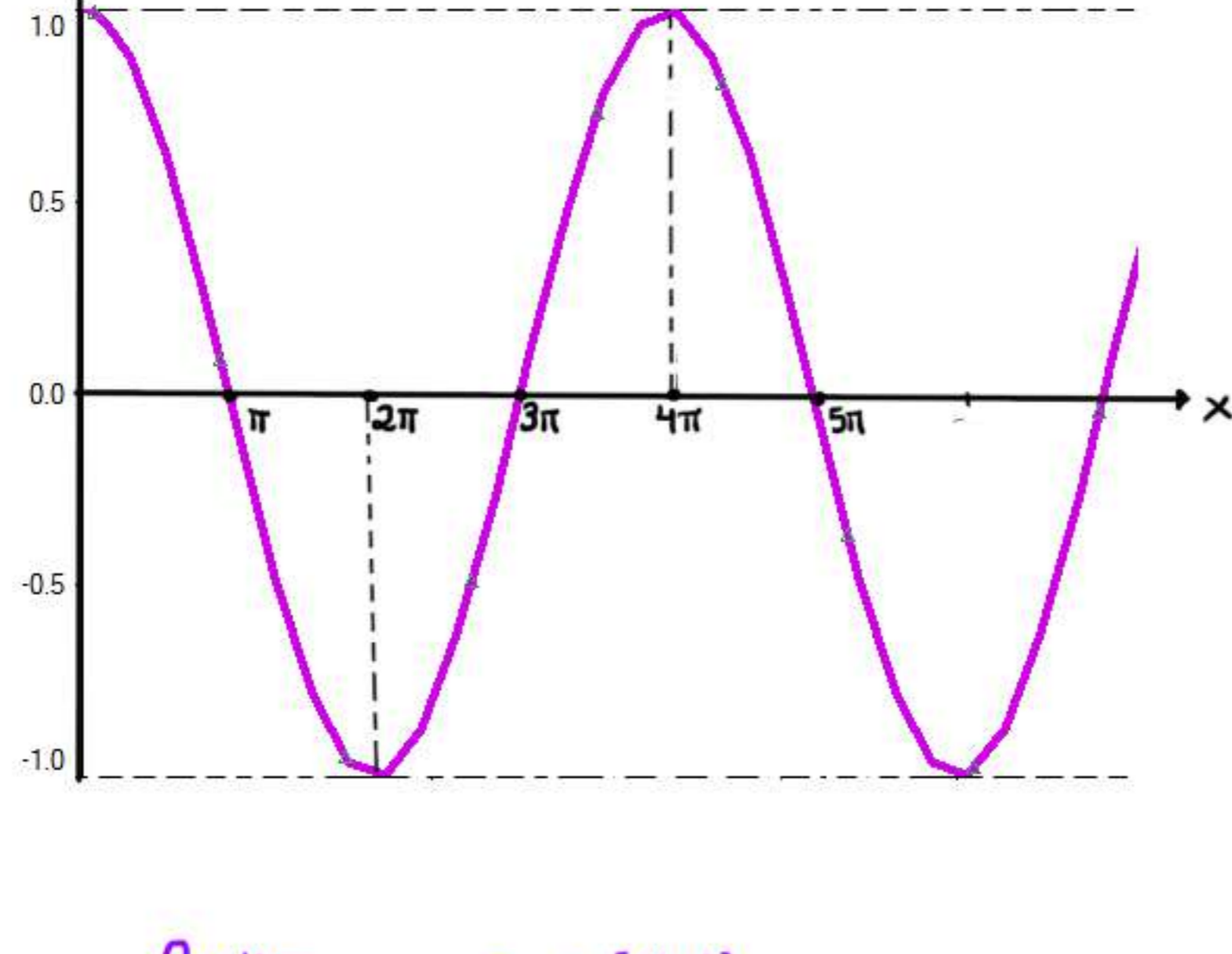
$f(x) = 1 \cdot \cos 2x \rightarrow P = \frac{2\pi}{2} = \pi$
 $\rightarrow Im = [-1, 1]$



$P = \pi$ e $Im = [-1, 1]$

5. $f: \mathbb{R} \rightarrow \mathbb{R}$ dada por $f(x) = \cos \frac{x}{2}$.

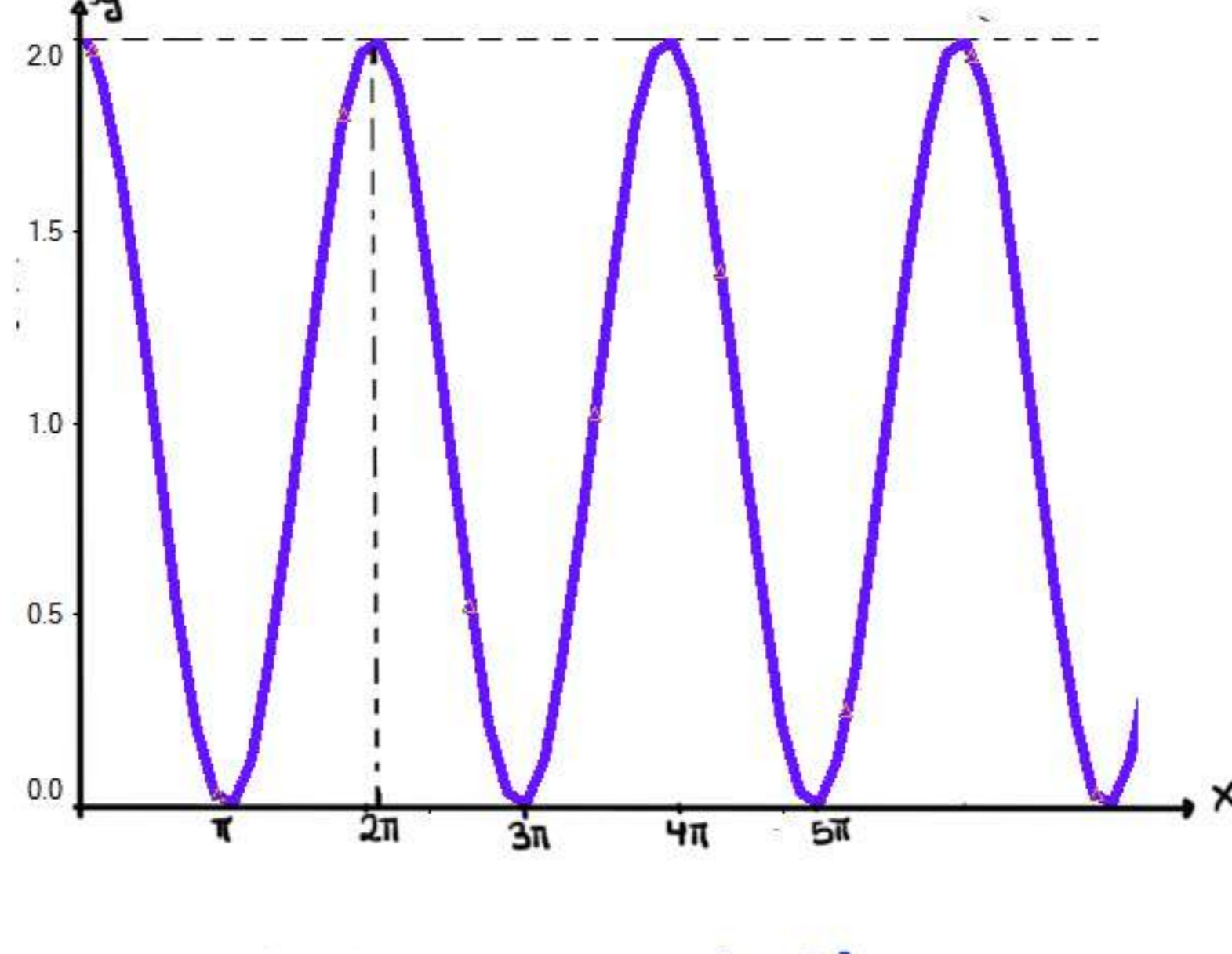
$f(x) = 1 \cdot \cos \frac{x}{2} \rightarrow P = \frac{2\pi}{1/2} = 4\pi$
 $\rightarrow Im = [-1, 1]$



$P = 4\pi$ e $Im = [-1, 1]$

6. $f: \mathbb{R} \rightarrow \mathbb{R}$ dada por $f(x) = 1 + \cos x$.

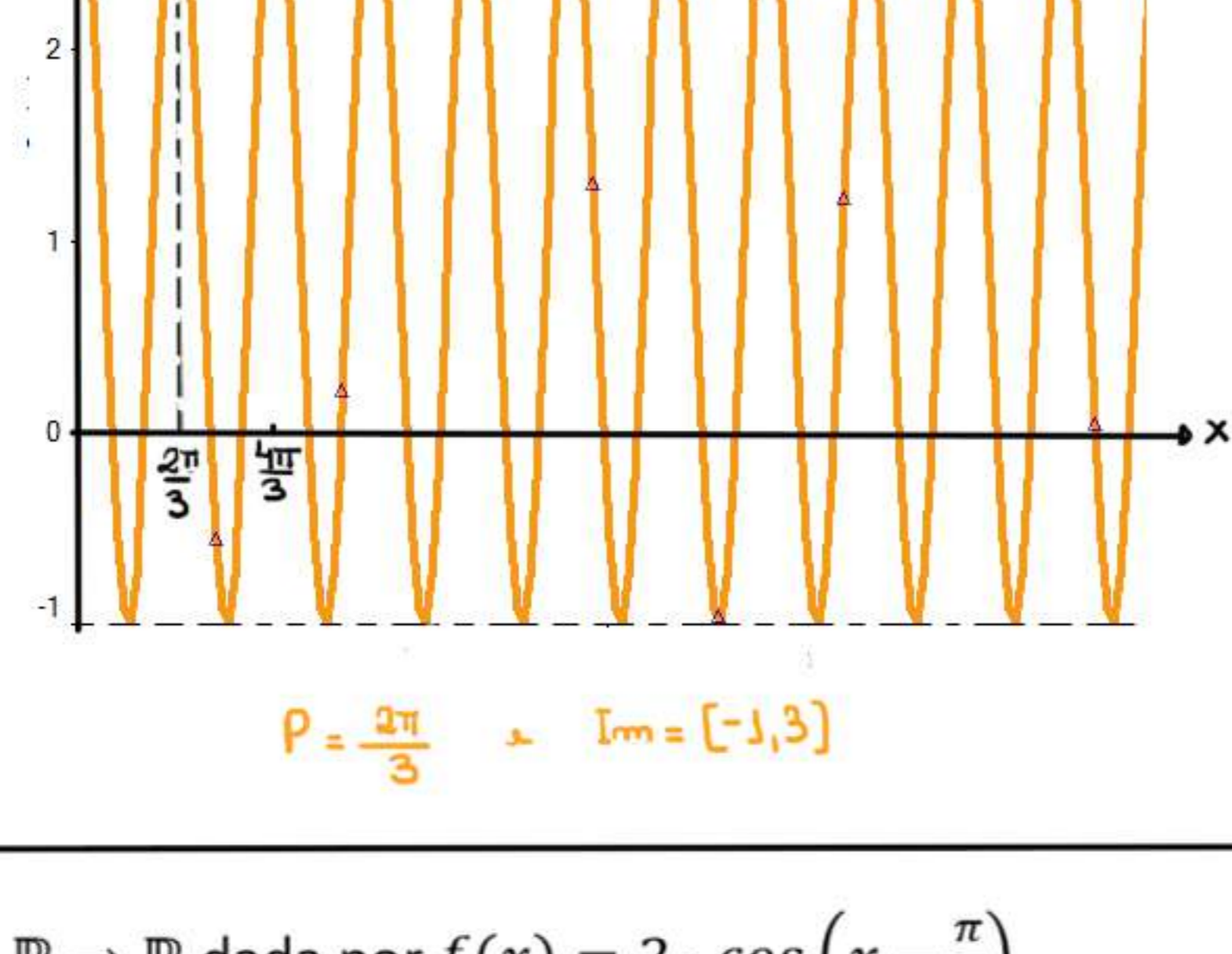
$f(x) = 1 + \cos x \rightarrow P = \frac{2\pi}{1} = 2\pi$
 $\rightarrow Im = [1-1, 1+1] = [0, 2]$



$P = 2\pi$ e $Im = [0, 2]$

7. $f: \mathbb{R} \rightarrow \mathbb{R}$ dada por $f(x) = 1 + 2 \cdot \cos 3x$.

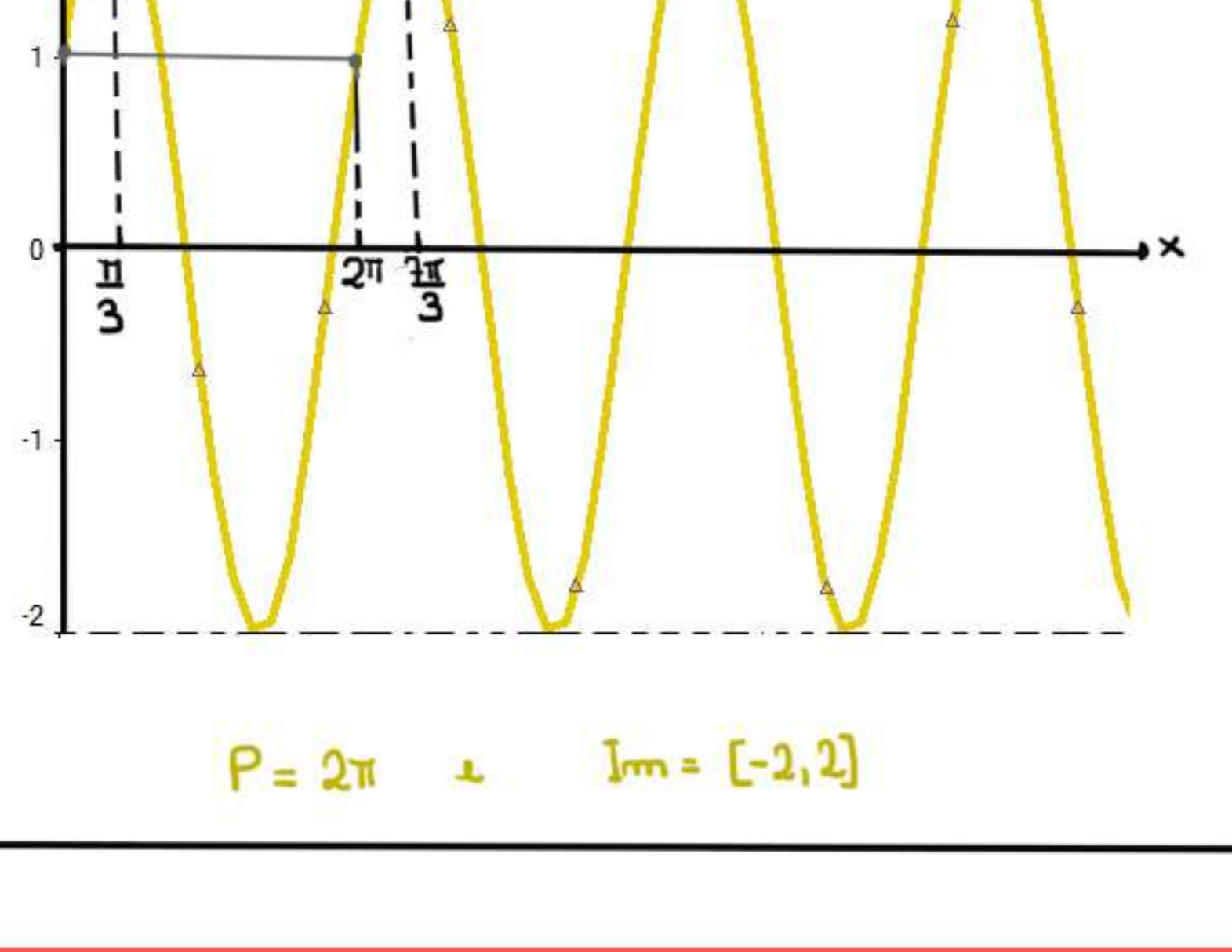
$f(x) = 1 + 2 \cdot \cos 3x \rightarrow P = \frac{2\pi}{3} = \frac{2}{3}\pi$
 $\rightarrow Im = [1-2, 1+2] = [-1, 3]$



$P = \frac{2\pi}{3}$ e $Im = [-1, 3]$

8. $f: \mathbb{R} \rightarrow \mathbb{R}$ dada por $f(x) = 2 \cdot \cos(x - \frac{\pi}{3})$.

$f(x) = 2 \cdot \cos(x - \frac{\pi}{3}) \rightarrow P = \frac{2\pi}{1} = 2\pi$ com desloc de $\frac{\pi}{3}$
 $\rightarrow Im = [-2, 2]$



$P = 2\pi$ e $Im = [-2, 2]$