

\* Technically, the domain of all these graphs is  $(-\infty, \infty)$ . If you write the domain of 2 cycles, you are okay

### General Sinusoidal Graphs Key

Sketch two complete cycles of each graph. Label all critical points.

State the domain and range of each graph.



1.  $y = 7 + 4 \cos 3(\theta - 10^\circ)$

Amp: 4

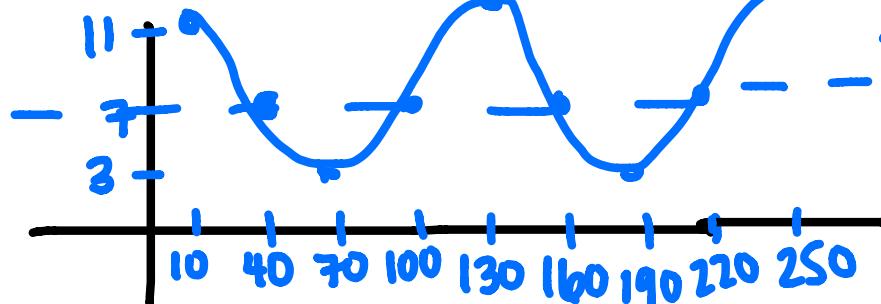
Per:  $\frac{360}{3} = 120^\circ$

CP:  $30^\circ$

VS: 7

PS:  $10^\circ$

(degrees)



D:  $(-\infty, \infty)$

R:  $[3, 11]$

2.  $y = -3 + 5 \sin(\theta + 200^\circ)$

Amp: 5

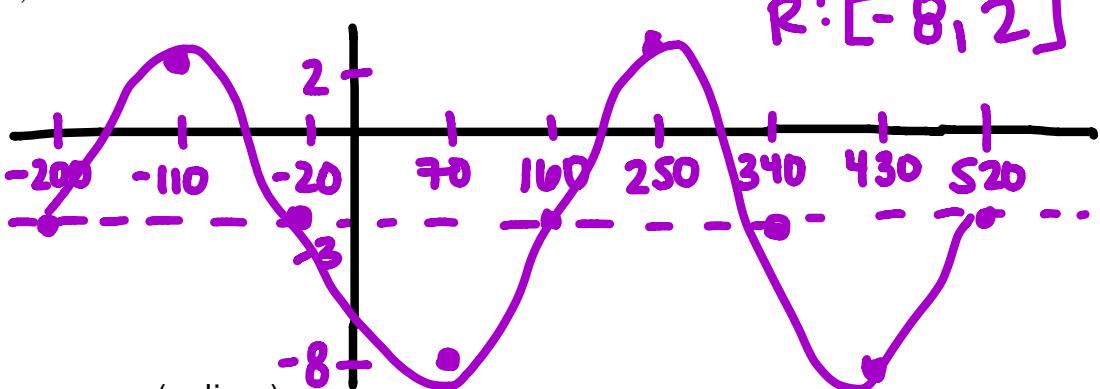
Per:  $360^\circ$

CP:  $90^\circ$

VS: -3

PS:  $-200^\circ$

(degrees)



D:  $(-\infty, \infty)$

R:  $[-8, 2]$

3.  $y = 2 + 6 \sin \frac{\pi}{4}(x-1)$

Amp: 6

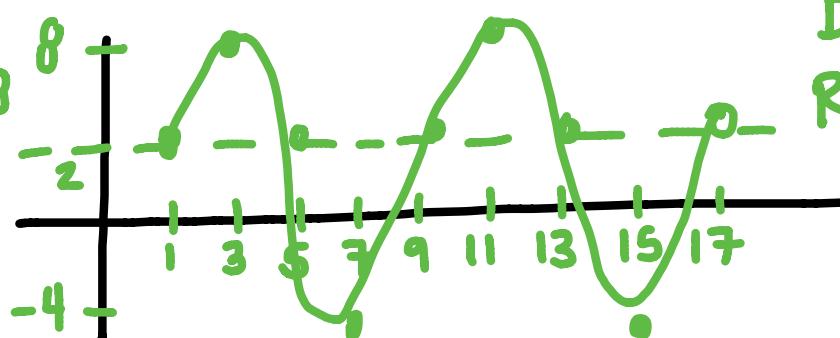
Per:  $\frac{2\pi}{\frac{\pi}{4}} = 2\pi \cdot \frac{4}{\pi} = 8$

CP: 2

(radians)

VS: 2

PS: 1



D:  $(-\infty, \infty)$

R:  $[-4, 8]$

4.  $y = 23 + 30 \cos \frac{1}{5}(x - \pi)$

(radians)

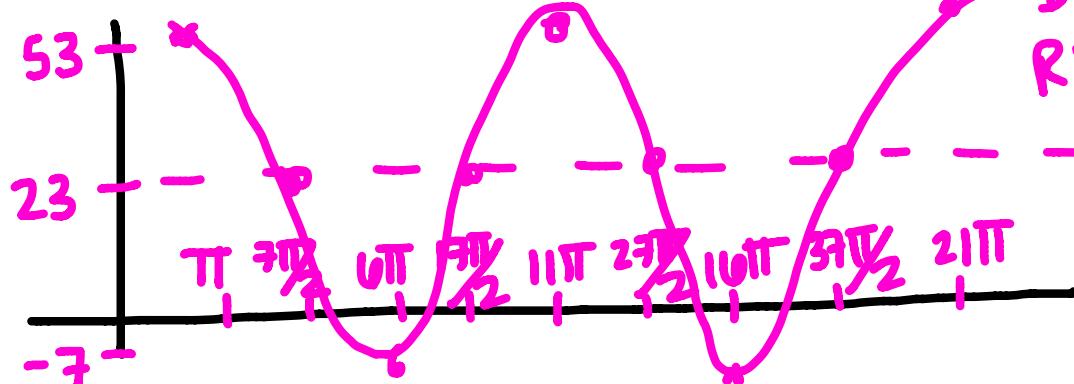
Amp: 30

Per:  $10\pi$

CP:  $\frac{\pi}{2}$

VS: 23

PS:  $\pi$



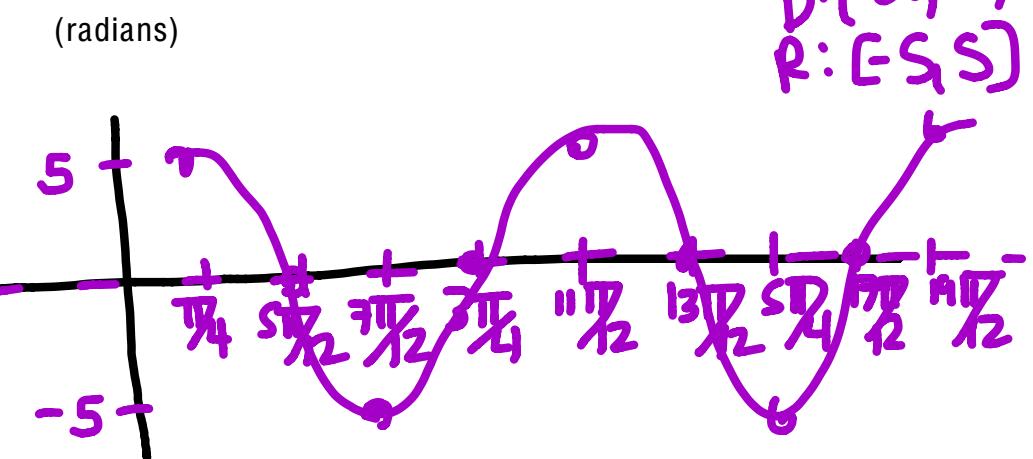
D:  $(-\infty, \infty)$

R:  $[7, 53]$

5.  $y = 5 \cos\left(3x - \frac{\pi}{4}\right)$

$$y = 5 \cos 3(x - \frac{\pi}{12})$$

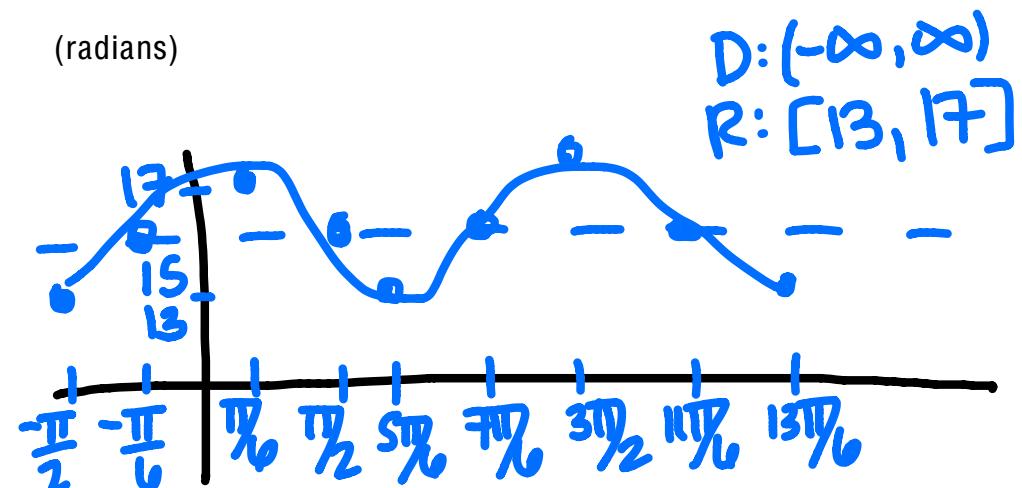
Amp: 5  
per:  $\frac{2\pi}{3}$  CP:  $\frac{\pi}{6}$   
VS: none (0)  
PS:  $\frac{\pi}{4}$



6.  $y = 15 - 2 \cos \frac{3}{2} \left(\theta + \frac{\pi}{2}\right)$

↑ reflection

Amp: 2  
Per:  $\frac{4\pi}{3}$  CP:  $\frac{\pi}{3}$   
VS: 15  
PS:  $-\frac{\pi}{2}$

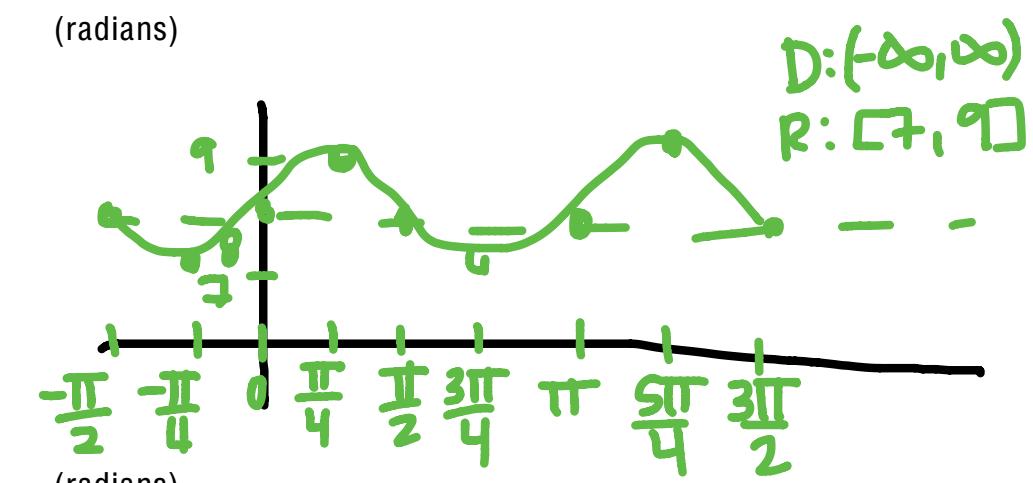


7.  $y = 8 - \sin(2x + \pi)$

$$y = 8 - \sin 2(x + \frac{\pi}{2})$$

↑ reflection

Amp: 1  
Period:  $\pi$  CP:  $\frac{\pi}{4}$   
VS: 8  
PS:  $-\frac{\pi}{2}$



8.  $y = -2 + 5 \cos \frac{\pi}{15}(x + 5)$

Amp: 5  
Per: 30 CP:  $\frac{15}{2}$   
VS: -2  
PS: -5

D:  $(-\infty, \infty)$   
R:  $[-7, 3]$

