

PreCalculus
Review for Midterm Exam
Graphs of Trig Functions & Sinusoidal Models

- Given: The domain of a sinusoid is $[-82^\circ, 998^\circ]$
 - The phase shift of the function is _____
 - The period of the function is _____
- Given: The range of a sinusoidal function is $[-24, -7]$. Find the following:
 - amplitude of the function _____
 - vertical shift of the function _____

Find the amplitude, period, vertical shift, and phase shift of the following.

3. $y = 3\sin\left(\frac{x}{4} + \frac{\pi}{12}\right) - 1$ 4. $y = -2\cos(3\theta - 120^\circ) + 2$

Graph each of the following.

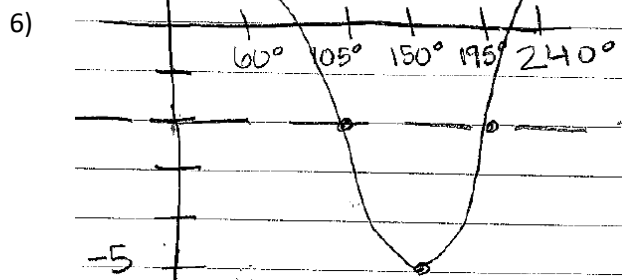
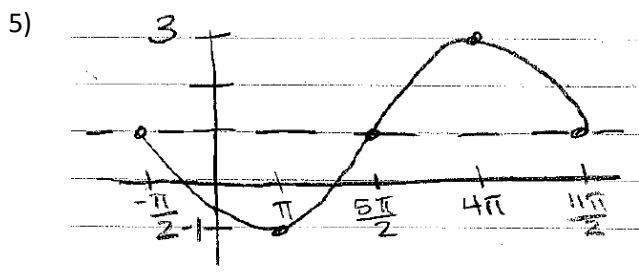
5. $y = -2\sin\left(\frac{1}{3}x + \frac{\pi}{6}\right) + 1$ 6. $y = 3\cos 2(\theta - 60^\circ) - 2$
 7. $y = 4\cos(2\theta)$ 8. $y = \sin\left(3x - \frac{3\pi}{2}\right)$
 9. $y = -2\cos\left(\frac{1}{2}x + \frac{5\pi}{6}\right) - 2$ 10. $y = 3\sin(3\theta - 45^\circ)$

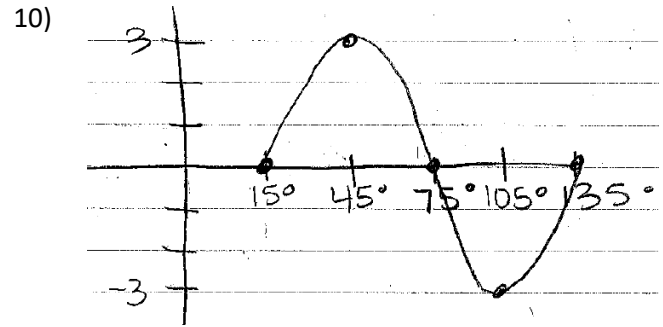
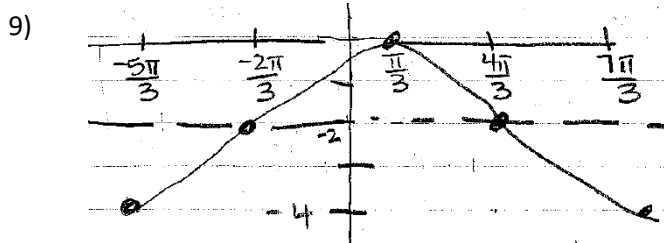
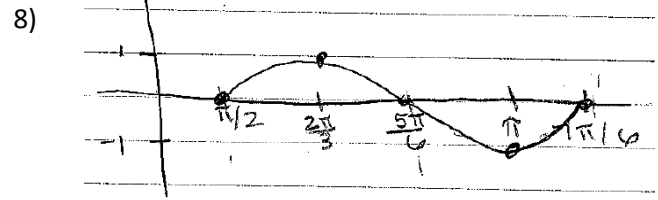
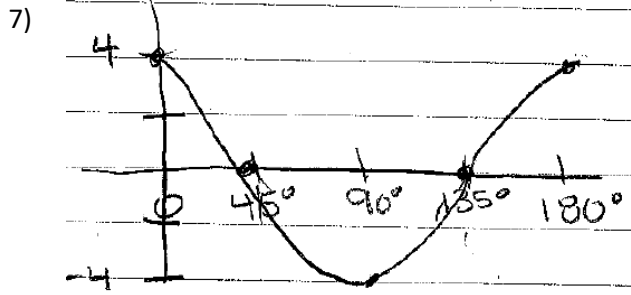
Write the equation of each function.

- Write the equation of a cosine function that has amplitude 5, period 270° , phase shift 60° , and vertical shift 3.
- Write the equation of a sine graph with amplitude 2, period π , phase shift $-\frac{\pi}{4}$, and vertical shift -4 .
- Write the equation of a sine function whose domain is $[8^\circ, 68^\circ]$ and whose range is $[4, 7]$.

Answers

- 1a) -82° 1b) 1080°
 2a) 8.5 2b) -15.5
 3) amp = 3 period = 8π vs = -1 ps = $-\frac{\pi}{3}$
 4) amp = 2 period = 120° vs = 2 ps = 40°





11) $y = 5 \cos \frac{4}{3}(\theta - 60^\circ) + 3$

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

13) $y = 1.5 \sin 6(\theta - 8^\circ) + 5.5$