

Homework 1

Name:

Date: May 20, 2013

P 1. Find

$$\sin \left(a \cos \left(b + \left(\cos \left(c\pi \sin \left(\frac{\pi}{4} \right) \right) \right) \right) \right)$$

where $c < 0$ and a root of $f(x) = x^3 - 2x$, $b > 0$ and a zero of $g(x) = x^2 + 2x - 3$, and a is the angle measure subtended by the arc of length $3\pi/2$.

P 2. Find an increasing sequence of angles

$$\theta_1, \theta_2, \theta_3, \dots$$

such that $\cos(\theta_1) = 1/2$, $\cos(\theta_2) = -1/2$, $\cos(\theta_3) = -1/2$, $\cos(\theta_4) = 1/2, \dots$

P 3. Find all values of θ in the interval $[4\pi, 6\pi)$ such that $\sin \theta$ is strictly between $1/2$ and $\frac{\sqrt{3}}{2}$. Express your solution in interval notation.

P 4. Sketch the graph of

$$f(x) = 2 \sin(x + \pi/2) - 5.$$

Find and illustrate the amplitude, period, phase shift, midline, domain and range.