

Quiz 4

Name(s):

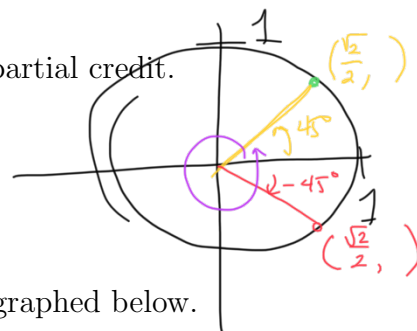
Show *all* your work. Reasonable supporting work must be shown for any partial credit.

1. [2] Find three angles θ so that $\cos(\theta) = \frac{\sqrt{2}}{2}$.

45° or $\frac{\pi}{4}$

$x = \cos \theta$
 -45° or $-\frac{\pi}{4}$

coterminal angles
 so $45^\circ + 360^\circ$
 or $\frac{\pi}{4} + 2\pi$



2. The depth of water in d feet, in a channel x hours after midnight is graphed below.

- (a) [1] Estimate the channel depth at 10am.

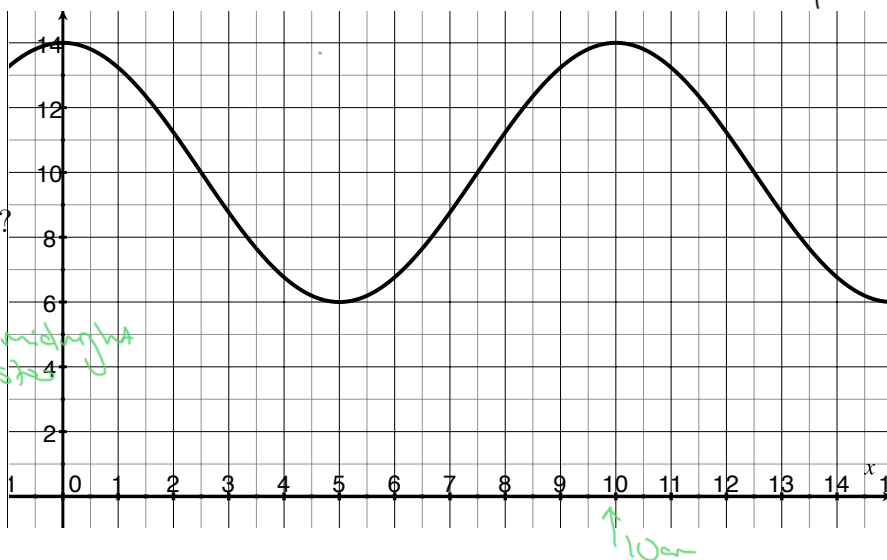
14 feet

- (b) [1] When is low tide?

when y -values are lowest so 5am although 15 hours after midnight

- (c) [1] What is the period of d ?

10 hours



- (d) [2] Describe either:

- the graph transformations need to transform the basic cosine graph into the graph of $d(x)$, or
- the amplitude, period, and phase shift for the graph of $d(x)$.

order
 +.5 vert stretched by a factor of 4
 +.5 vert shift up by 10
 +.5 horizontally stretch by $\frac{1}{(\frac{\pi}{5})}$
 $\frac{2\pi}{?} = 10 \Rightarrow \frac{2\pi}{10} = \frac{\pi}{5} = ?$

OR
 +.5 Amplitude $\frac{1}{2}(14-6) = 4$
 +.5 period 10 hours
 +.5 no phase shift with respect to cosine

- (e) [3] Find an algebraic rule for the function d (note that there are *many* correct answers for this!).

$4 \cos\left(\frac{\pi}{5}x\right) + 10$
 +.5 world work

OR
 $A \cos(bx) + \text{shift up}$

$\frac{2\pi}{b} = 10 \Rightarrow \frac{2\pi}{10} = \frac{\pi}{5}$
 $b = \frac{\pi}{5}$

$4 \cos\left(\frac{\pi}{5}x\right) + 10$

+1.5 use cosine graph
 +1.5 notation/sense

+1.5 use cosine graph
 +1.5 notation/sense

reduce on Day 15

§4.2 #128

Worksheet #9

Worksheet #5

Activity 16 #2

Worksheet #8

§4.4 #50