tcore 122: Quiz 4

Key

x	22.5°	30°	45°	60°	67.5°	135°
$\cos(x)$	$\dfrac{\sqrt{2+\sqrt{2}}}{2}$	$\dfrac{\sqrt{3}}{2}$	$\dfrac{\sqrt{2}}{2}$	$\dfrac{1}{2}$	$\dfrac{\sqrt{2-\sqrt{2}}}{2}$	$-\dfrac{\sqrt{2}}{2}$
$\sin(x)$	$\dfrac{\sqrt{2-\sqrt{2}}}{2}$	$\dfrac{1}{2}$	$\dfrac{\sqrt{2}}{2}$	$\dfrac{\sqrt{3}}{2}$	$\dfrac{\sqrt{2+\sqrt{2}}}{2}$	$\dfrac{\sqrt{2}}{2}$
$\tan(x)$	$\sqrt{\dfrac{2-\sqrt{2}}{2+\sqrt{2}}}$	$\dfrac{1}{\sqrt{3}}$	1	$\sqrt{3}$	$\sqrt{\dfrac{2+\sqrt{2}}{2-\sqrt{2}}}$	-1

1. (Wheater §10.1) Use the triangle ABC and find the following: *Sohcahtoa*

   (a) [1] $\sin \angle C$

   $\dfrac{opp}{hyp} = \dfrac{10}{12} = \dfrac{5}{6} \approx .833$ (+.5)

   (b) [1] $\cos \angle A$

   $\dfrac{adj}{hyp} = \dfrac{10}{12} = \dfrac{5}{6} = .833$ (+.5)

   (+.5) $a^2 + b^2 = c^2$
   (+.5) adj

   (c) [2] the length of $\overline{BC}$

   n.k $10^2 + BC^2 = 12^2$ (+1)   So,
   => $BC^2 = 144 - 100 = 44$ $BC = \sqrt{44}$
                                   ≈ 6

   (d) [1] $\tan \angle C$

   $\dfrac{opp}{adj} = \dfrac{10}{\sqrt{44}}$ (+.5) ≈ 1.508

   (+.5)

   (e) [1] the measure of angle B

   $90°$ (+1)   (reading instruction)
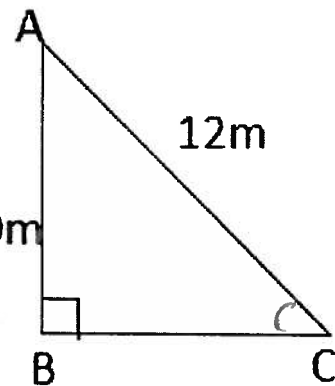
2. [4] (Wheater §10.2) A kite string attached to the ground makes and angle of 67.5° with the ground. When the full 500 ft of string has been played out, how hight is the kite?
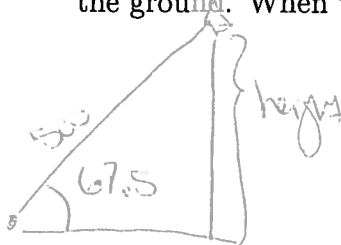
   height

   want : opp } use Sine   (+1)
   have : hyp

   $\sin 67.5 = \dfrac{height}{500}$ (+1)

   drew picture (+1)

   height $= 500 \cdot \sin 67.5 = 500 \cdot \dfrac{\sqrt{2+\sqrt{2}}}{2}$

   only (+.5)   (+.5)
   $= 250(\sqrt{2+\sqrt{2}})$
   ≈ 461.94

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3. [3] (textbook) Lang's chapter five is called "Splitting Points".
   Explain what point-splitting is.

   A way "to convert one flap into two, three, or more flaps by folding alone" pg 93

   For example, one flap [drawing] can be modified through folding (and not cutting) into two flaps [drawing] through a process called the Yoshizawa split.

4. [2] (Lang) What might a person use point-splitting for when designing an origami pattern?

   This is a great way of modifying a base to create new patterns! Yoshizawa often used this split to make ears on the head of one of his patterns.
   Lang used a split for the Pteranodon's head and tail, but toes are a great use of the split as well.

5. [3] (5/7 lecture) Identify two online resources that the library has made available for math students (note: this includes people from this class!).

   Databases? (I love JStor & MathSciNet?)
   Class guide (for this class even?) (includes brief biographies arranged on a time line)
   Chat with a Librarian service

6. [2] Identify what helped you the most when folding the Valentine/Hummingbird. Do you think this would be helpful in other contexts (i.e. writing up worksheets, writing papers, completing homework sets for physics, performing labs in chemistry, etc...)?

   helpful in other contexts?   Yes   No

   IIII Peers
   I   Repetition   III
   I   Instructor
   I   Writing notes   I
   II   Videos online   I
   I   Rereading instructions   I

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