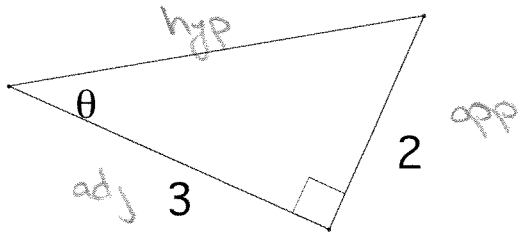
Quiz 5

Key

Show *all* your work. No credit is given without reasonable supporting work. There are *two* sides to this quiz.

1. (§6.2 #5) Given the angle θ in the right triangle show on the right, answer the following:



SOHCAHTOA

(a) [1] $\tan\theta$

$\tan\theta = \frac{opp}{adj} = \frac{2}{3}$ (+.5) (+.5)

(b) [2] $\cos\theta$

$\cos\theta = \frac{adj}{hyp} = \frac{3}{\sqrt{13}}$ (+.5) notation (+.5)

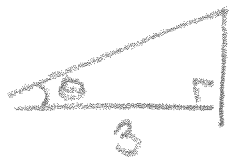
need to find hyp: $(hyp)^2 = 2^2 + 3^2$ (+.5)

$\Rightarrow hyp = \sqrt{4+9} = \sqrt{13}$ (+.5)

2. [2] (WebHW13 #7) Let θ be an angle whose terminal side is in the 3rd quadrant and $\tan(\theta) = \frac{1}{3}$. Find $\sin(\theta)$

one way:

$\tan\theta = 1/3$



correct Δ (+1)

$\sin\theta = \frac{opp}{hyp} = \frac{1}{\sqrt{10}}$

need to find hyp:

$(hyp)^2 = 3^2 + 1^2 = 10$ (+.5)

$\Rightarrow hyp = \sqrt{10}$

b/c 3rd quad

$\sin\theta = -\frac{1}{\sqrt{10}}$ (+.5)

another way:

$\tan\theta = 1/3$ (+1)

$\Rightarrow \frac{\sin\theta}{\cos\theta} = 1/3$

$\Rightarrow 3\sin\theta = \cos\theta$

know $\sin^2\theta + \cos^2\theta = 1$ (+.5)

$\sin^2\theta + (3\sin\theta)^2 = 1$ (+.5)

$\sin^2\theta + 9\sin^2\theta = 1$

$10\sin^2\theta = 1$

(+.5 algebra)

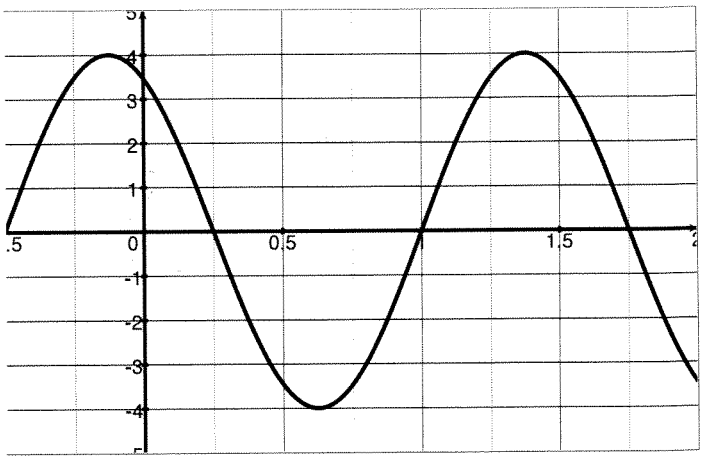
$\Rightarrow \sin^2\theta = \frac{1}{10}$

$\Rightarrow \sin\theta = \pm\sqrt{\frac{1}{10}}$

b/c 3rd quad

$\sin\theta = -\frac{1}{\sqrt{10}}$ (+.5)

3. (§5.3 #47) Let f be the function graphed below.



(a) [1] Does f have an inverse? Why or why not?

no the graph fails the horizontal line test

(b) [1] Find the amplitude of f.

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(c) [1] Find the period of f.

1.5 = 1.5 or 3/2

(d) [1] Find the phase shift of f.

-.5

(e) [1] Write an equation that represents the graph of f in the form $y = a \sin k(x-b)$.

$y = 4 \sin K(x - \frac{-1}{2})$

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

need $\frac{2\pi}{K} = \frac{3}{2}$

$\Rightarrow \frac{2}{3} 2\pi = \frac{3}{2} K \cdot \frac{2}{3}$

$\frac{4\pi}{3} = K$

(+.5)

Check:

$4 \sin \frac{4\pi}{3}(1 + .5)$

$= 4 \sin \frac{4\pi}{3} \cdot \frac{3}{2}$

$= 4 \sin 2\pi$

$= 0$ ✓