Quiz 4

Key

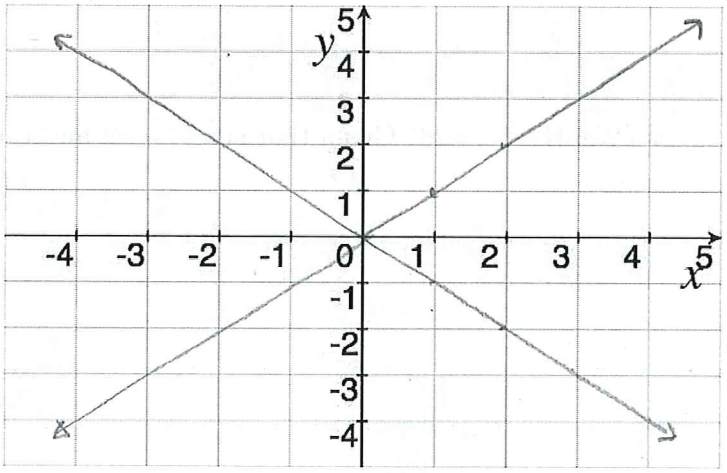
Show *all* your work. No credit is given without reasonable supporting work. There are *two* sides to this quiz.

1. (§1.1 #77) Consider the points (x, y) that are the same distance from the x-axis as to the y-axis.

   (a) [1] Sketch the points described.

   1.5

   note (3,3) is the same dist from x-axis as the y-axis (3)

   (b) [2] Find the equation for the points.

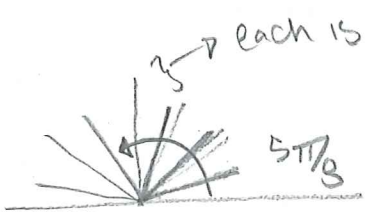
   1.5

   $y = x$ and $y = -x$

   or

   $|y| = |x|$

2. [1] (§4.1 #12) Draw $\frac{5\pi}{8}$rad.



or $\frac{5\pi}{8} \cdot \frac{180}{\pi} = \frac{5 \cdot 90}{4} = \frac{5 \cdot 45}{2} = 112.5^\circ$

3. [1] (WebHW16 #20) Let θ be an angle such that $\tan(\theta) < 0$ and $\cos(\theta) < 0$. Which quadrant is θ in?

x coord is neg

$\frac{\sin\theta}{\cos\theta} < 0$

since $\cos\theta < 0$

$\frac{?}{-} = -$

$\sin\theta$ has to be positive $\Rightarrow$ I, II

Overlap in Quadrant 2.

4. [2] (Circle Worksheet) Find the point(s) on the unit circle whose first coordinate is $\frac{1}{2}$. Indicate how you found your answers.

unit circle: $x^2+y^2=1$ (+.5)

$(\frac{1}{2})^2 + y^2 = 1$

$\frac{1}{4} + y^2 = 1$

$-\frac{1}{4} \quad -\frac{1}{4}$

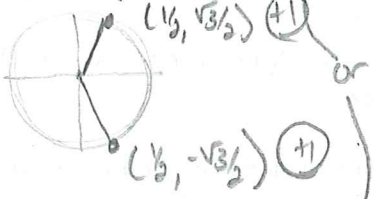
$y^2 = \frac{3}{4}$

$y = \pm\frac{\sqrt{3}}{2}$

so $(\frac{1}{2}, \frac{\sqrt{3}}{2})$ and $(\frac{1}{2}, -\frac{\sqrt{3}}{2})$ (+.5) gave points

alg (+.5) or both answers (+.5)

recall circle from class (+1) or



(+1) (+1)

5. [3] (WebHW16 #23) Given that $\sin(\phi) = \frac{24}{25}$ and $\tan(\phi) > 0$, find $\tan(\phi)$ exactly.

$\tan(\phi) = \frac{\sin(\phi)}{\cos(\phi)}$ (+.5)

$= \frac{24/25}{\cos(\phi)}$

so we need to find $\cos\phi$

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

$(\frac{24}{25})^2 + (\cos(\phi))^2 = 1$ (+.5)

$-(\frac{24}{25})^2 \qquad -(\frac{24}{25})^2$

$(\cos(\phi))^2 = \frac{625-576}{625} = \frac{49}{625}$

$\cos(\phi) = \pm\frac{7}{25}$ (+.5)

b/c $\tan(\phi) > 0$

$\Rightarrow \cos(\phi) = \frac{7}{25}$ (+.5)

so $\tan(\phi) = \frac{24/25}{7/25} = \frac{24}{7}$ (+.5)

we could use $\arcsin$ or

$\sin(\phi) = \frac{24}{25} \Rightarrow \phi = \sin^{-1}(\frac{24}{25})$

b/c $\tan(\phi) > 0$