

## Calculus I Quiz 2

Name: **KEY**

Pledge:

SHOW ALL WORK. Any answers without work will not receive full credit.

1. Express the set of numbers  $x$  satisfying the given condition as an interval:  $|4x - 1| \leq 8$

$$4x - 1 \leq 8, -(4x - 1) \leq 8 \rightarrow (4x - 1) \geq -8$$

$$\begin{array}{ccccccc} -8 & \leq & 4x - 1 & \leq & 8 & & \\ \downarrow & & \downarrow & & \downarrow & & \\ & & + & & - & & \end{array}$$

$$-\frac{7}{4} \leq \frac{4x}{4} \leq \frac{9}{4}$$

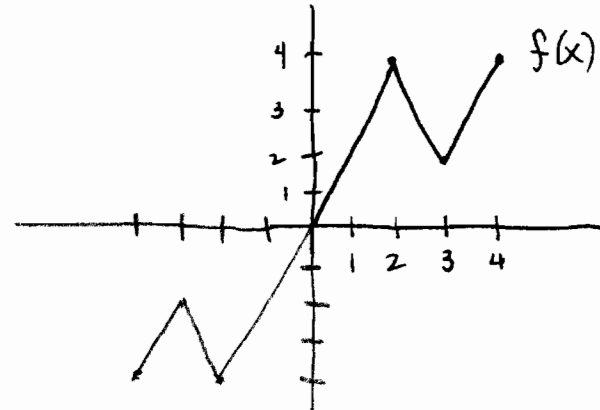
$$-\frac{7}{4} \leq x \leq \frac{9}{4}$$

$$\boxed{\left[-\frac{7}{4}, \frac{9}{4}\right]}$$

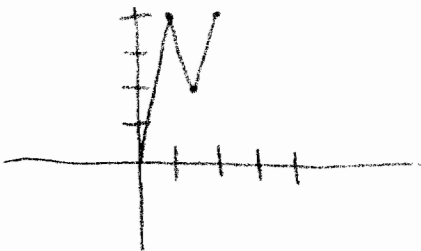
2a. Extend the graph so that it is an odd function.

$$f(-x) = -f(x)$$

$$\text{So } f(-2) = -f(2) = -4, \text{ etc.}$$



2b. Sketch the graph of  $f(2x)$ .



$$f(2(1)) = f(2) = 4$$

$$f(2(\frac{3}{2})) = f(3) = 2$$

etc.

3. Solve for  $0 \leq \theta < 2\pi$ :  $\sin \theta = \cos 2\theta$

$$\sin \theta = 1 - 2\sin^2 \theta$$

$$2\sin^2 \theta + \sin \theta - 1 = 0$$

$$(2\sin \theta - 1)(\sin \theta + 1) = 0$$

$$2\sin \theta - 1 = 0$$

$$\sin \theta = 1/2$$

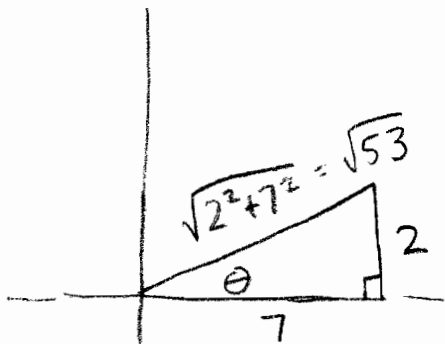
$$\theta = \pi/6, 5\pi/6$$

$$\sin \theta + 1 = 0$$

$$\sin \theta = -1$$

$$\theta = 3\pi/2$$

4. Find  $\sin \theta$ ,  $\sec \theta$ ,  $\cot \theta$  if  $\tan \theta = 2/7$ , where  $0 < \theta < \pi/2$ .



$$\sin \theta = \frac{2}{\sqrt{53}}, \quad \sec \theta = \frac{\sqrt{53}}{7}, \quad \cot \theta = \frac{7}{2}$$