Name: *Answer Key*

## Math 1316: Mastery Quiz 7 (Version A)

Please show all your work for computations, and write your final answers in the boxes.

1. How many solutions for $t$ does a linear trigonometric equation like $A\sin(t) = B$ have? How many different quadrants do these solutions appear in?

*important point: usually 2 Quadrants*

*Infinitely many, or zero. 2 Quadrants, or a quadrantal angle.*

*∞ solutions 2 Quadrants*

*∞ solutions*
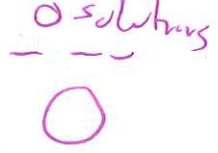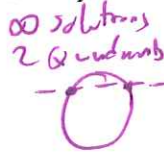
*0 solutions*

2. Suppose you found one solution for $A\tan(t) = C$ and it is in Quadrant 4. What other Quadrant(s) have solutions to this equation?

*slope*

**Quadrant 2**

3. Find two solutions in two different quadrants to the following linear trigonometric equation. Give your answers in radians. Either give an exact answer, or round to 3 digits past the decimal.

$$2\sin(t) + 1 = 0$$
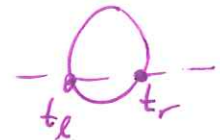
$t =$
$-\pi/6$
$7\pi/6$

$\sin t = -\frac{1}{2}$

$t_r = \sin^{-1}\left(-\frac{1}{2}\right)$

$= -\frac{\pi}{6}$

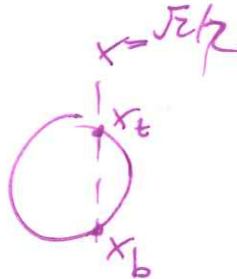$t_\ell = \pi - t_r$

$= \pi + \pi/6$

$= 7\pi/6$

Other solutions found by adding multiples of $2\pi$ to $t_r$ or $t_\ell$.

4. Find the general solution to the following linear trigonometric equation. Give your answer in radians, expressed in terms of an integer $K$. Either give an exact answer, or round to 3 digits past the decimal.

$$\cos(\underbrace{2t}_{\times}) = \frac{\sqrt{2}}{2}$$

$t =$

$$\pm\frac{\pi}{8} + \pi K,$$

$K$ is an integer

$x = \sqrt{2}/2$

$x_t = \cos^{-1}(\sqrt{2}/2)$

$= \pi/4$

$x_b = -x_t$

$= -\pi/4$

$2t = x = \pm\frac{\pi}{4} + 2\pi K,$   $K$ is an integer

$t = \pm\frac{\pi}{8} + \pi K,$   $K$ is an integer