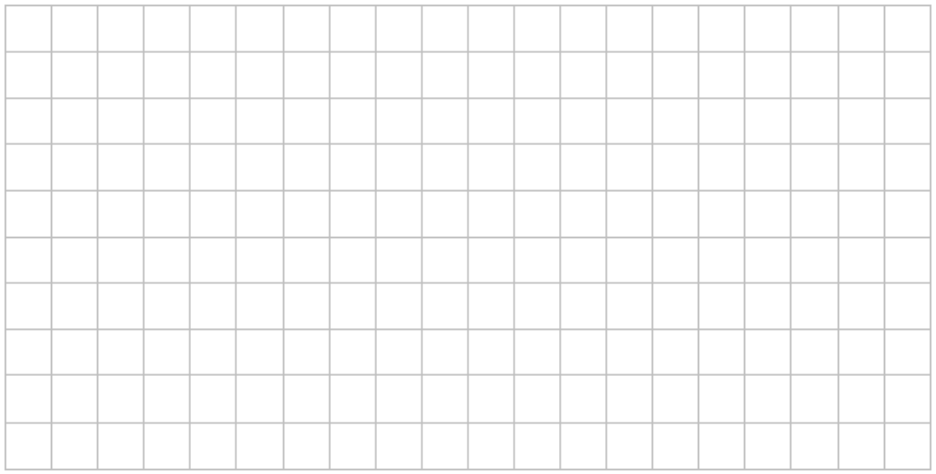
Name: _____ M$6 Homework 18

1. On the accompanying grid, sketch the graphs of $y = \tan x$ and $y = \cos\frac{1}{2}x$ for values of x in the interval $-2\pi \le x \le 2\pi$, and state how many values of x in the interval $-2\pi \le x \le 2\pi$ are solutions of the equation $\tan x = \cos\frac{1}{2}x$.



2. If the minute hand of a clock measures 4 inches, how long is the arc traced by this hand from 10:00 to 11:45? (Leave answer in terms of π.)

3. Express in simplest form in terms of i:
$\frac{1}{i^2} + i^{314} - i^9$

4. Find the exact value of each expression in simplest form without using a calculator.

a $\cot 420°$

b $(\sec 150°)(\cos 150°)$

c $\left(\sin\frac{\pi}{2}\right)\left(\tan\frac{\pi}{6}\right) - \left(\tan\frac{\pi}{4}\right)\left(\cos\frac{\pi}{2}\right)$

d $\cos\frac{11\pi}{6} - \cot\frac{5\pi}{3}$

5. If $\sin(2\theta + 18) = \cos(5\theta - 12)$, which of the following pairs of angles are represented in this equation?
(1) 42°, 48° (3) 12°, 68°
(2) 38°, 52° (4) 45°, 45°

6. If $f(x) = 6 - x^2$ and $g(x) = \sqrt{x+1}$, find all values of x that satisfy the equation: $(f \circ g)(x) = f(x) + 1$.

1. _____

2. _____

3. _____

4. *a* _____
b _____
c _____
d _____

5. _____

6. _____