

# Quiz 5

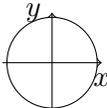
Show all your work

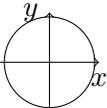
Name: \_\_\_\_\_

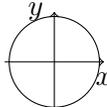
Score: \_\_\_/36

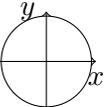
**No Calculator allowed in this part.**

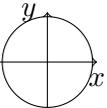
**Problem 1:** One mark each for a–h, two marks each for i–k.

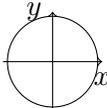
a. Express  $-330^\circ$  in radians. Draw 

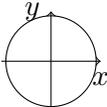
b. Express  $\frac{7}{4}\pi$  radians in degrees. Draw 

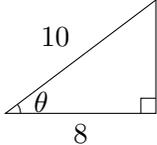
c. Evaluate  $\cos(\frac{17}{6}\pi)$  exactly. Draw 

d. Evaluate  $\tan(\frac{5}{3}\pi)$  exactly. Draw 

e. Evaluate  $\cot(-450^\circ)$  exactly. Draw 

f. Evaluate  $\csc(\frac{13}{6}\pi)$  exactly. Draw 

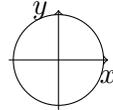
g. Evaluate  $\sec(-\frac{9}{2}\pi)$  exactly. Draw 

h. Evaluate  $\sin(\theta)$  exactly where  $\theta$  is as marked 

i. If  $\theta$  is an angle in Quadrant III, write  $\cot(\theta)$  in terms of  $\cos(\theta)$ .

j. When drawn in standard position, the terminal arm of angle  $\theta$  contains the point

$(-\sqrt{2}, \sqrt{2})$ . Determine  $\tan(\theta) = \boxed{\phantom{00}}$  and  $\csc(\theta) = \boxed{\phantom{00}}$ .

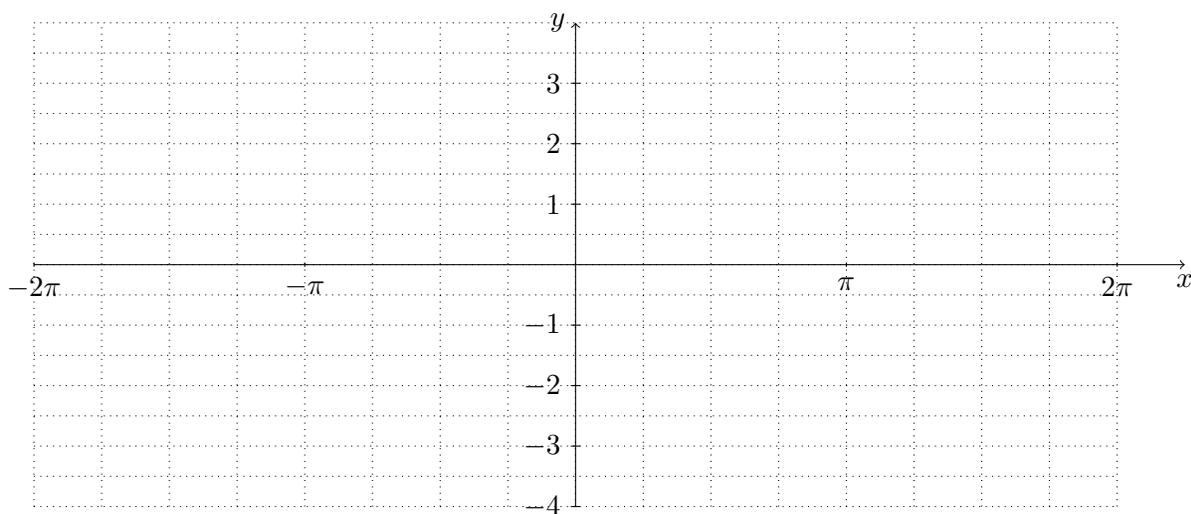


k. Find the reference number  and terminal point  deter-

mined by  $\frac{29}{3}\pi$ . Draw

Score: /14

**Problem 2:** Graph both  $f(x) = \tan(x)$  and  $g(x) = \cot(x)$  on the same coordinate system. Put key points as solid dots on the grid provided. Indicate asymptotes if any.



Score: /4

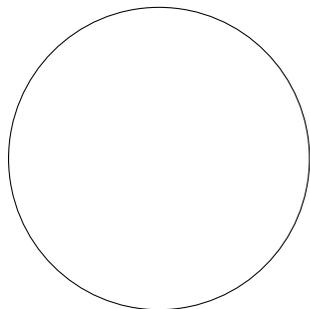
# Quiz 5

Show all your work

Name: \_\_\_\_\_

**Calculators permitted in this part.**

**Problem 3:** If a circle of radius 4 cm subtends a **chord** of 3 cm, find the central angle opposite to the chord.



Score: /2

**Problem 4:** If Westjet flying Vancouver to Calgary climbs at an angle of  $15.5^\circ$  with a constant speed of 600 km/h, how long will it take to reach an altitude of 1 km? Assume no wind. Give your answer to the nearest seconds.

Score: /4

**Problem 5:** Determine for each function whether it is even, odd, or neither.

a.  $f(x) = \frac{\sin(x)}{x^3}$

b.  $g(x) = \frac{\cos(x)}{x^2}$

c.  $h(x) = x \csc(x)$

d.  $\omega(x) = x^3 \sec(x)$

Score: /4

**Problem 6:** The front wheel of Nikolaj's toy bike has diameter 45 cm, and the larger back wheel has diameter 60 cm.

- a. When the back wheel turns through an angle of 5 radians, what angle does the front wheel turn through?

Score: /2

- b. How many revolutions does the front wheel complete after the bike travels 1 km?

Score: /2

**Problem 7:** A traffic helicopter is hovering at an elevation of 150 m, directly above a straight road. Two houses are situated along the road on opposite sides of the helicopter, and the angle of depression to one house is  $38^\circ$  and to the other is  $51^\circ$ .

- a. How far apart are the houses?

- b. What would the angles of depression be to each house as the helicopter descends to 100 m altitude?

Score: /4