Directions: Beginning in cell #1, read the question and show the work necessary to answer it (attach separate sheets if necessary). Search for your answer and call that cell #2. Continue in this manner until you complete the circuit. Note: The last question will not have a match!

#1 Find the slope of the line which connects the point (b, 3b) to the point (3b, 6b). [Note: b≠0.]	Answer: $\frac{-1+ln3}{2}$ #_____ The graph of y = 2 sin(3x - $\frac{\pi}{2}$) has an amplitude of _____, a period of _____, and a phase shift of _____ to the _____ (left/right) when compared to the graph of y = sinx.
Answer: $\frac{2e}{1-e}$ #_____ As x grows infinitely large, the value of $h(x) = \frac{2x}{5x+8}$ approaches what number?	Answer: 4/5 #_____ Find the average rate of change of $w(x) = 3x^2 + 1$ over the interval [-1, 4].
Answer: 75 #_____ For $\frac{\pi}{2} \leq A \leq \pi$, $sinA = \frac{3}{5}$. Find sin(2A).	Answer: 9 #_____ If $f(x) = lnx$ and $g(x) = e^{x+1}$, find $f(g(2)) - g(f(e))$.
Answer: 21 #_____ $f(x) = g^{-1}(x)$ and $g(x) = \frac{2x}{x-1}$; $f(5) = ?$	Answer: $(-\infty, 2) \cup (2, \infty)$ #_____ $log_{10}25 + log_{10}4 =$
Answer: [-2, 2] #_____ Solve for x: $e^{2x+1} - 3 = 0$	Answer: x = -3 #_____ State the domain of $y = \ln(x - 2)$.
Answer: 2/5 #_____ The expression $3x^2$ is used to calculate the slope at any point on the graph of the function g(x) = x³ – 1. Write the equation of the line tangent to g(x) at its x-intercept.	Answer: 3/2 #_____ The linear function f(x) is parallel to the line $y = \frac{4}{5}x - 7$ and passes through the point (-5, 0). What is f(-6)?

Answer: -4/5 # _____ The quadratic function g(x) has a vertex at (-5, 0) and y-intercept of (0, -5). What is g(1)?	Answer: 2 # _____ The graph of $g(x) = -\sqrt{4-x^2}$ is a semicircle in quadrants III and IV. Find the domain of $g(x)$.
Answer: 4 # _____ Simplify the expression $\frac{x^3+125}{x+5}$ and then evaluate the resulting expression for x = -5.	Answer: 26 # _____ Find $x^2 - y^2$ given that $x + y = 7$ and $x - y = 3$.
Answer: $3 - e^2$ # _____ Given $f(x) = x^2 + 5$, find $\frac{f(3+h)-f(3)}{h}$ $(h \neq 0)$.	Answer: 36 # _____ State the range of $w(x) = \frac{2x+1}{x+3}$.
Answer: x > 2 # _____ $81^{\frac{3}{4}} + 8^{\frac{2}{3}} + 125^{\frac{1}{3}}$	Answer: -24/25 # _____ The graphs of $g(x) = \ln(x + 3)$ and $f(x) = \frac{2x+1}{x+3}$ have the same vertical asymptote. What is it?
Answer: 5/3 # _____ Solve for x: $\ln(x) - \ln(x + 2) = 1$	Answer: $y = 3x - 3$ # _____ Evaluate g(x) = 5sinx + cos(2x) for x = $\frac{\pi}{2}$.
Answer: -36/5 # _____ Find the average rate of change of the function $p(x) = \frac{4}{5}x - 2$ from x=0 to x=15.	Answer: 6 + h # _____ If the perimeter of a rectangle is 68 and the width is 10, find the length of a diagonal.

Fill in The Unit Circle
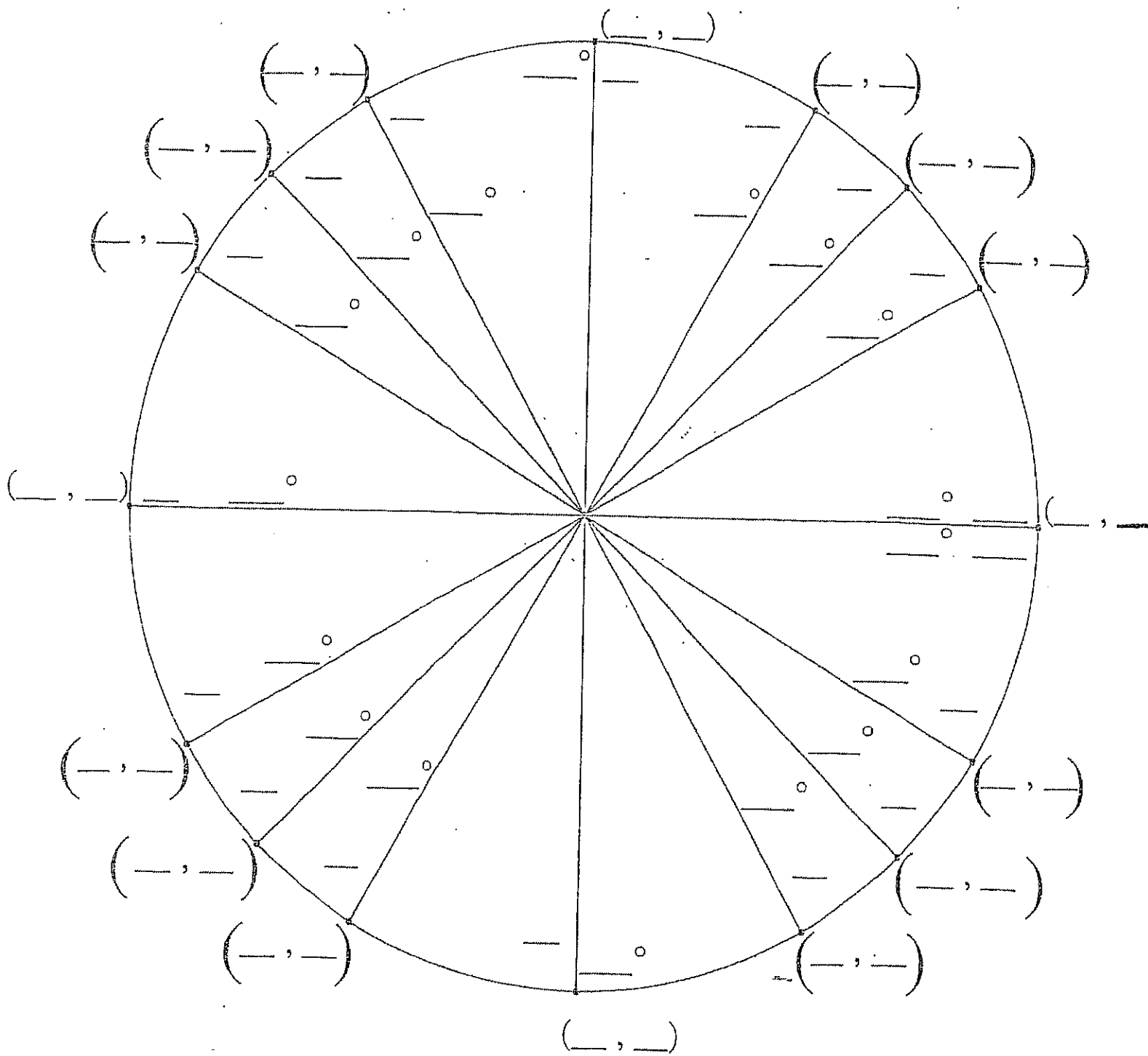
Use the Unit Circle to answer each of the following:

1. $\sin 0$

2. $\sin \frac{\pi}{2}$

3. $\sin \frac{3\pi}{4}$

4. $\cos \pi$

5. $\cos \frac{7\pi}{6}$

6. $\cos \frac{\pi}{3}$

7. $\tan \frac{7\pi}{4}$

8. $\tan \frac{\pi}{6}$

9. $\tan \frac{2\pi}{3}$

10. $\tan \frac{\pi}{2}$

11. $\sec \frac{\pi}{4}$

12. $\csc \frac{5\pi}{3}$

List each of the trigonometric identities:

13. Pythagorean (all 3)

14. $\cos 2x$ (all 3)

15. $\sin 2x$

16. Quotient Identities (both)