ALGEBRA REVIEW

BLAKE FARMAN

Lafayette College

Name: _____

1. Find all **real** solutions to each equation.
   (a) $x^2 - 8x + 12 = 0$

   (b) $2x^2 - 9x = 5$

(c) $x^2 - 1 = 0$

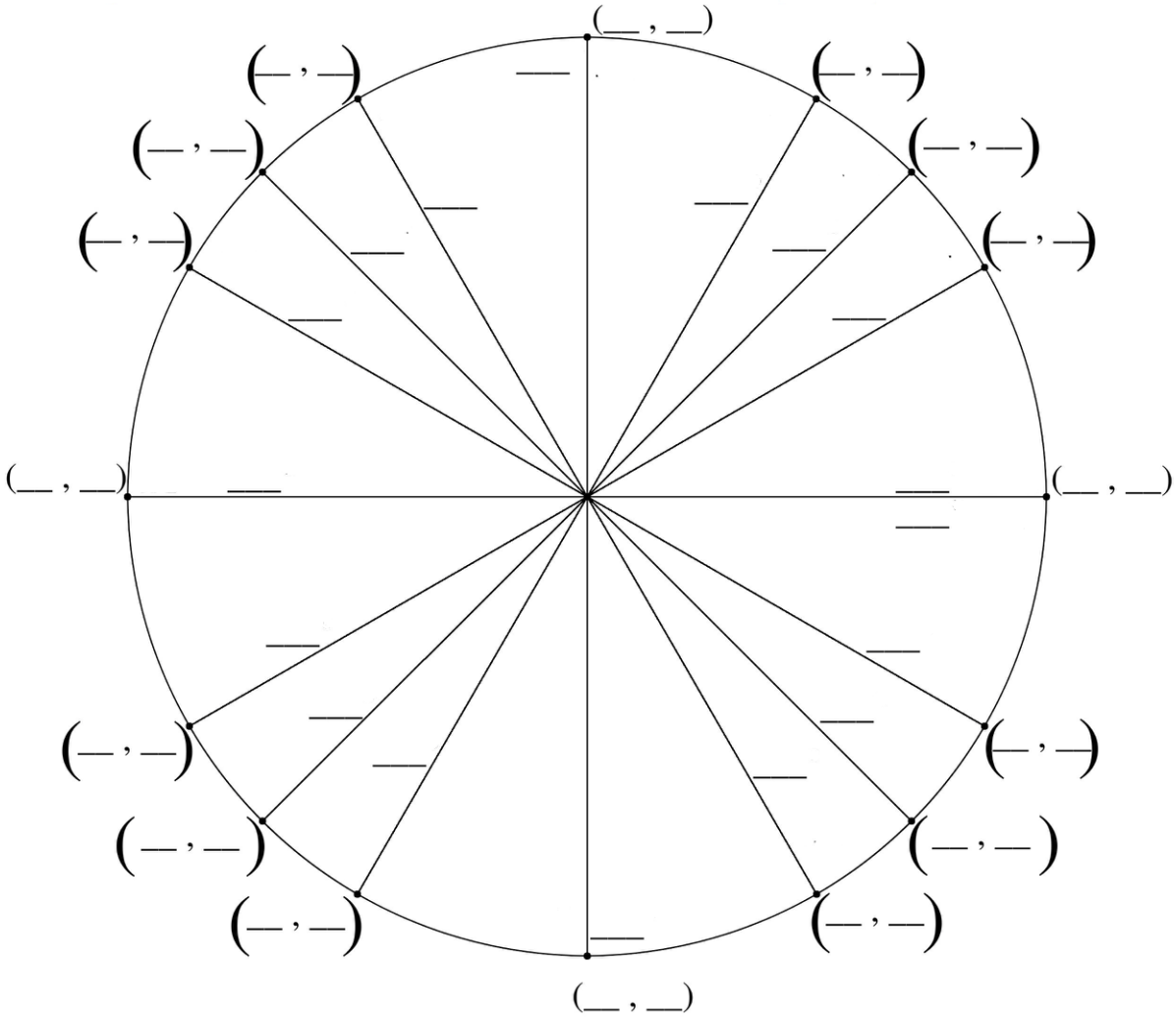
(d) $x^2 = 2$

2. Sketch a graph of the following functions:
   (a) $y = \sin(x)$

(b) $y = \cos(x)$

(c) $y = (x-2)^2 + 1$

3. Fill in the unit circle below with angle measurements in **radians** and the corresponding values of cosine and sine.



4. Simplify the following expressions:

(a) $$\frac{\frac{xy}{x+y}}{\frac{x^2y}{(x+y)^3}}$$

(b) $$\frac{\frac{xy}{x-y}}{\frac{x^2}{y}\cdot\frac{y^3}{x}}$$

(c) $\dfrac{\dfrac{1}{x}-\dfrac{1}{y}}{\dfrac{1}{x}+\dfrac{1}{y}}$

(d) $\dfrac{4yz}{x^2}-\dfrac{2z}{xy^2}+\dfrac{1}{xyz}$

5. $2x(y-3) - y(x+xy) + 2y(x+1)$

6. $x(y+z) - z(x+y) + 2y(x-z) - x(3y-2z)$

7. Solve the following inequalities:
   (a) $\frac{x}{2} - 1 < 3x + 9$

   (b) $x + 3 < 2x + 8 < 3x + 10$

   (c) $|2x - 5| \leq 11$