HOMEWORK 1: ALGEBRA REVIEW
MATH 161

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Name: _____

Know how to do these problems without the aid of a book or notes.

1. Find the solutions to each polynomial.
   (a) $f(x) = x^2 - 8x + 12$

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

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

   (d) $f(x) = x^2 - 2$

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

Date: August 27, 2018.

(b) $y = e^x$

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

3. Draw the unit circle and fill in the following angles with their corresponding coordinates:
   (a) $\pi/2, \pi, 3\pi/2, 2\pi$ **(b)** $\pi/6, 5\pi/6, 7\pi/6, 11\pi/6$ **(c)** $\pi/4, 3\pi/4, 5\pi/4, 7\pi/4$ **(d)**$\pi/3, 2\pi/3, 4\pi/3, 5\pi/3$

4. Simplify the following expressions:

(a) $x^2(4(x-2)^3) + 2x(x-4)^4$

(b) $\dfrac{(x^2+3)^2(6) - 6x(2)(x^2+3)(2x)}{(x^2+3)^4}$

(c) $\dfrac{\frac{1}{x^2} - \frac{1}{9}}{x-3}$

(d) $\dfrac{\sqrt{25+x^2} - x(1/2)(25+x^2)^{-1/2}(2x)}{25+x^2}$

5. Solve the following inequalities:

(a) $\frac{x}{2} - 1 < 3x + 9$

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

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