

MATH 1010-2: PRACTICE EXAM #2

1 (10 points). Solve the following equation for x :

$$\sqrt[3]{2x+1} + 2 = 5.$$

2 (10 points). Solve the following equation for x :

$$3x^2 + 4x - 2 = 2x^2 + 7x + 8.$$

3 (10 points). Graph the following system of linear inequalities:

$$x + y \leq 3$$

$$x - 1 \leq 1.$$

Clearly label any vertices in your graph.

4 (10 points).

(a) Compute

$$\det \begin{pmatrix} 1 & -2 \\ 3 & 5 \end{pmatrix} =$$

(b) Write $(3 + 2i)(2 - 7i)$ as a complex number in standard form.

5 (10 points). Simplify

$$(3 - 7x + 8x^2) - [(x + 3)^2 - 2(x - 3)]$$

Write your answer as a polynomial in standard form.

6 (10 points). Perform the indicated operation and simplify:

$$\frac{-x}{x+3} + \frac{2x+1}{x+7}$$

7 (10 points). Rationalize the denominator of the following expression and simplify:

$$\frac{\sqrt{5} + 1}{1 - \sqrt{2}}.$$

8 (10 points). Simplify the following complex fraction:

$$\frac{\left(\frac{x+3}{x+5}\right)}{\left(\frac{1}{x^2-25}\right)}.$$

9 (5 points). Using fractional exponents, rewrite the following expression without radicals and simplify:

$$\frac{(3u - 2v)^{2/3}}{\sqrt{(3u - 2v)^3}}.$$

10 (5 points). Rewrite the following expression without any fractional exponents, negative exponents, *or* radicals:

$$\frac{8^{1/2}\sqrt{x^3}}{8^{1/6}\sqrt{x^9}}.$$

11 (10 points). Solve for x by any method you choose:

$$(x + 2)^2 - 15 = 0.$$