

**Practice Exam 3/ Sections 8.6, 9.1, 9.2, 9.4, 10.1, 10.3, 10.4, 10.5**

You may not use notes or a textbook as you take this exam. However, you may use your calculator. It is necessary to show work in order to qualify for partial credit. Failure to show work may result in a lower score.

1. Solve using matrices.

$$x + 2y - 3z = 39$$

$$2x - y + z = -10$$

$$3x - 4y - 2z = 4$$

2. Solve the inequality algebraically.

$$2(4 + 2x) > 2x + 3(2 - 5x)$$

3. Find the domain of the function.

$$f(x) = \sqrt{2x - 7}$$

4. Solve and write interval notation for each compound inequality. Then, graph the solution set.

(a)  $-9 < 8x - 3 \leq 5$

(b)  $2a - 9 > 1$  or  $-3a + 5 > 14$

5. Graph on a plane.

$$4x - 2y \leq 6$$

6. Simplify. Remember to use absolute-value notation when necessary.

(a)  $\sqrt[8]{(a-3)^8}$

(b)  $\sqrt[3]{(2x+7)^6}$

7. Simplify by factoring.

(a)  $\sqrt{175}$

(b)  $\sqrt[3]{54x^3y^7z^8}$

8. Multiply and simplify.

(a)  $\sqrt{14} \cdot \sqrt{70}$

(b)  $\sqrt[3]{x^2y^4} \cdot \sqrt[3]{x^2y^6}$

9. Rationalize each denominator.

(a)  $\sqrt{\frac{3}{5}}$

(b)  $\sqrt[3]{\frac{2c}{5a^2}}$

10. Add or subtract. Simplify by combining like radical terms, if possible.

(a)  $2\sqrt{18} - 5\sqrt{32}$

(b)  $\sqrt[3]{54x} + \sqrt[3]{2x^4}$

11. Rationalize each denominator.

(a)  $\frac{7}{2 + \sqrt{7}}$

(b)  $\frac{3 + \sqrt{2}}{9 - \sqrt{2}}$