Review Test for Final Exam #2
MAT104 Section F401

Instructions: Take this review test having 2 hours of time, without using books, notes and calculators. Ask questions if any of these problems are not clear to you.

1. Solve for x: $8 - 3x \geq 21$

2. Write an equation of the line through $(1, -2)$ and parallel to the line $12x + 3y = 24$.

3. Multiply and combine like terms:$(2x^2 - x - 3)(3x + 1)$

4. Combine and simplify, using positive exponents only: $(-2a^{-2}b^3)^{-2}(4a^2b)^2$

5. Write .000000000123 in scientific notation.

6. Factor completely: $13x^2 + 26x - 195$

7. Solve for x. Leave your answer in radical form: $3x^2 - 7x = 2$.

8. Combine into a single fraction:
$$\frac{x-6}{x^2+3x-18} + \frac{3}{x+6}$$

9. Divide and simplify your answer:
$$\frac{3x}{x^2+x-20} \div \frac{3x^6 - 9x^3}{x+5}$$

10. Simplify:
$$\frac{\frac{1}{2} + \frac{1}{x}}{\frac{4}{x^2} - \frac{1}{4}}$$

11. Solve for x: $4^{2x-1} = 64^{x-3}$

12. If $f(x) = 4x - x^2$, find the value of $f(-2)$.

13. Find the vertex of the parabola $y = -7x^2 + 14x + 2$

14. The angle elevation of the sun is 60° at a time when a tree casts a shadow 24 yards long. Find the height of the tree. ($\sin 60^\circ = \frac{\sqrt{3}}{2}$, $\cos 60^\circ = \frac{1}{2}$ and $\tan 60^\circ = \sqrt{3}$)

15. Simplify
$$\frac{\log_5 125}{\log 100000}$$