Math 97Intermediate AlgebraWinter 2007

Sample Questions for Final Exam

1. Simplify the expression \( \frac{4}{x+2} - \frac{2}{x+1} \). (Section 7.6)

2. Simplify the expression \( \frac{1}{1-x} + \frac{x^2}{x-1} \). (Section 7.6)

3. Solve the equation \( \frac{1}{x+1} + \frac{1}{x} = 1 \). (Section 7.7)

4. Simplify the expression \( (x^{-1}y^3)(x^3y^{-2}) \). (Section 8.1)
5 Simplify the expression $\frac{x^2}{\sqrt{x}}$. (Section 8.3)

6 Simplify the expression $\left(\frac{\sqrt{x} - x^{99}}{x^2 - 18x}\right)^0$. (Section 8.1)

7 Simplify the expression $\sqrt{48} - \sqrt{12}$. (Section 8.5)

8 Show that $x = 1 - \sqrt{3}$ satisfies $x^2 - 2x - 2 = 0$. (Section 8.5)

9 Solve the equation $\sqrt{5x - 1} = 2$, and check your answer. (Section 8.7)
10. Use the quadratic formula to find the solutions of the equation $2x^2 + 2x = -1$ and simplify the answers. *(Section 6.2)*

11. Find the coordinates of the vertex of the parabola $y = x^2 - 2x - 1$. *(Section 5.3)*

12. When a small company sells $x$ MP3 players, its total profit in dollars is $y = 500x - 5x^2$. How many MP3 players should the company sell to get the maximum profit? *(Section 6.4)*

13. Sixty miles per hour is how many feet per second? *(Hint: There are 5280 feet in each mile.)* *(Section 7.1)*

14. Simplify the expression $\frac{ab+b}{a^2+a}$, and state any restrictions on the variables $a$ and $b$. *(Section 7.4)*
15. Is the function \( f(x) = 3x(1 - x) \) linear, quadratic, or neither? (Section 4.1)

16. What are the \( x \)-intercepts of the equation \( y = (2x + 1)(4 - x) \)? (Section 4.5)

17. Find the equation of a line that goes through the points \((-1, 2)\) and \((2, 0)\). (Section 2.4)

18. Find the equation of a line through the point \((1, 2)\) that is parallel to the line \(x + y = 1\). (Section 2.5)
A popular company rents moving trucks for $29 plus 99 cents per mile driven. Write down a function that describes the cost in dollars of renting a truck and driving it for $x$ miles. (Section 2.4)

If $y$ varies inversely with $x$ and $y = 2$ when $x = 5$, find an equation for $y$ in terms of $x$. (Section 7.3)

Simplify the expression $\frac{x^2 + 2x + 1}{x^2 - 1} \div \frac{x + 2}{x - 1}$ completely, and state any restrictions on the variable. (Section 7.4)

Solve the equation $\sqrt{3x - 5} = 4$, and find any restrictions on the variable. (Section 8.7)