Sample Departmental Algebra Test (Math Lab)

You may not use calculators for this exam. Please indicate your answers clearly.
Your instructor will grade your exam immediately when you are finished.
If you miss one or more problems, you get one chance on each problem to correct your answer.

1. Factor and simplify $\sqrt{x^{10} + 2x^4}$.

2. Simplify completely $\frac{4x^3y + 8x^2y^3}{4x^3y + 6x^2y}$.

3. Multiply $(5x^3 + 2\sqrt{x})(3x^2 + \frac{6}{x^3})$ and express the answer in terms of rational powers of $x$ (e.g. $x^{3/2} + x^5$).

4. Simplify $\frac{\sqrt{x^3}}{\sqrt{x^3}}$ and express the answer in terms of a rational power of $x$ (in simplest form).

5. Solve for $y$: $x = \frac{3y - 2}{2y + 1}$

6. Solve for $x$: $x^2 + x = 12$

7. Solve for $x$: $3 + \frac{x}{2 - x} = 1$. 