PREREQUISITE REVIEW
for MATH 1314, College Algebra

This pretest covers material that you are expected to already know as you take MATH 1314 College Algebra. If you do poorly, you should discuss with the instructor whether you need to move to the previous course.

1. Solve for $x$: $2x - 11 < 7$
2. Simplify: \( \frac{(-3y^2)^2}{(3^2 y^4)^{-2}} \)
3. Subtract: \( \frac{5}{b + 5} - \frac{2}{b} \)
4. Solve for $x$: $\sqrt{x - 1} = 3 - x$
5. Solve for $x$: \( \frac{2}{x - 1} + 1 = \frac{2}{x^2 - x} \)
6. Simplify: \( \frac{x^{\frac{1}{2}} y^{\frac{1}{2}}}{x^{\frac{3}{2}} y^{\frac{1}{2}}} \)
7. Simplify: \( \frac{4 \sqrt[4]{32 x^3 y^8}}{4 \sqrt[4]{32 x^3 y^8}} \)
8. Solve for $a$: $a^2 + 4a = 45$
9. Solve for $b$: $5b^2 - 5b + 1 = 0$
10. Factor completely: $8x^3 - 15x^2 - 2x$
    \[ \frac{2 - 2}{x} \]
11. Simplify: \( \frac{y}{x} - \frac{x}{y} \)
    \[ \frac{y}{x} - \frac{x}{y} \]
12. Simplify: \( \frac{t^2 - 25}{t^2 + 8t + 15} \div \frac{t - 5}{t + 9} \)
13. If one side of a right triangle is 3 inches and the hypotenuse is 4 inches, how long is the other side of the triangle?
14. Solve this system of equations: \( 5x + 4y = -8 \)
    \( 2x - y = -11 \)
15. Arlene wishes to invest $5000. If she invests part at 7% simple interest, part at 6%, and receives a total of $332 after one year, how much does she invest at each rate?