

**STUDY GUIDE FOR THE  
MATH ADVISING TOOL (MAT)  
MATH 1303-COLLEGE ALGEBRA  
AND  
MATH 1307-FINITE MATH FOR BUSINESS ANALYSIS**

1. Simplify expressions with two variables
2. Evaluate expressions using order of operations
3. Solve a problem for one variable, given the values of other variables
4. Put equation of a line in slope-intercept form and find y-intercept and slope
5. Solve an equation with one variable
6. Exponents
7. Simplify fractional expressions (For example,  $\frac{18}{\left(\frac{1}{2}-8\right)}$  )
8. Solve system of two equations with two variables
9. Solve equations involving absolute value
10. Factoring
11. Solve inequalities
12. Graph the equation of a line
13. Simplify an expression involving radicals
14. Solve word problems

Sample Problems

Simplify expressions with two variables

$$4(3x + 4s) =$$

$$2p + 4(q - 3) - 6(p - 2) =$$

$$3x^2 + 4(y - x) + 5y(2y - x) =$$

Evaluate expressions using order of operations

$$3[5 - 3(6 - 2)] =$$

$$4(-6 + 8) - 3 + 4(5 - 2) =$$

$$7 - 3^2(8 - 5) + 7 - 4 =$$

Solve a problem for one variable, given the values of other variables

$$9x = 5(y - 32), \text{ solve for } y \text{ when } x = 55$$

$$x + 5y = 20, \text{ solve for } x \text{ when } y = 3$$

$$2x + 5y = 30, \text{ solve for } y \text{ when } x = 5$$

Put equation of a line in slope-intercept form and find y-intercept and slope

$$2x + y = 7$$

$$4x - 7y = 28$$

$$y = x + 3$$

Solve an equation with one variable

$$8x - 4 = 5 - x, \text{ solve for } x$$

$$3(x - 4) = x - 10$$

$$x + 8 = 10$$

Exponents – Simplify the expression

$$(-5x)^2(3x^3)$$

$$(2x + 5y)^2$$

$$(x^8)^2 - \frac{x^5}{x^3}$$

Simplify fractional expressions

$$\frac{p}{p + \frac{7}{q}}$$

$$\frac{14}{6 + \frac{1}{2}}$$

$$\frac{b}{\frac{p}{q} + \frac{d}{e}}$$

Solve system of two equations with two variables

$$\begin{aligned} 4x + 2y &= 12 \\ 3x - 3y &= -9 \end{aligned}$$

$$\begin{aligned} 6m - 4n &= 24 \\ 14m + 4n &= 16 \end{aligned}$$

Absolute Values

$$|x + 3| = 2$$

$$|5 - 2x| = 11$$

$$|-7| + 6 =$$

Factoring

$$6x^2 - 3x^3$$

$$x^2 + 10x + 16$$

$$3x^2 - x - 4$$

Solve Inequalities

$$5x - 3 \leq 10$$

$$2 < 4 - x < 7$$

$$x - 7 < 2$$

Graph the equation of a line

$$x - 3y = 6$$

$$y = 4x + 5$$

$$4x - 2y = 12$$

Simplify an expression involving radicals

$$\frac{5}{\sqrt{10x}}$$

$$\sqrt{16x} + 3\sqrt{x}$$

$$\sqrt{144x^9y^2}$$

Solve word problems