Mth 95 Review Sheet for Exam 1 Name

The exam will be closed book though you have free rein with your calculator and can use the pink reference card. You may write additional notes on the pink card if you so desire.

This exam is focused on Lines and Linear Equations. Expect writing/explaining problems, T/F problems, Fill-in-the-Blank problems, computational problems, graphing problems, and building and working with linear models.

Topics to be covered:

- Anything and everything (prerequisite material) from your previous math classes is fair game.
- Solving linear equations algebraically.
- Solving implicit equations for y.
- Solving literal equations. e.g. rearranging formulas.
- Solving equations graphically.
- Graphing without the aid of the Calculator: Lines ↔ Eqns
- Graphing with the calculator: Creating a friendly window, finding intercepts/roots, values, intersections.
- Interpretation/Analysis of Linear Mathematical Models.

A Few Practice Problems for Midterm 1

Neatness and organization are necessary for full credit. Consider every one of these questions as a possible test question. If you cannot figure out how to do the problem on your own come by for hints and help before the last minute.

1) Outline the 8-step procedure for solving linear equations. Be sure you write neatly using complete sentences and correct grammar.

2) Solve for x $9(3x - 7) = -3(13 - 5x)$	3) Solve for x $7 - 2(3x - 5) = 3(3 - 2x)$	4) Solve for Q $7.2Q + 6.9 = 4.5(2Q - 1.4)$	5) Solve for x $\frac{2x - 5}{3} = x - 4$
6) Solve for x $\frac{2x}{3} + 4 = x + \frac{14}{3}$	7) Solve for x $\frac{3 - x}{2} + 3\frac{1}{2} = 5 - \frac{3\cdot(2x - 5)}{2}$	8) Solve for x $\frac{3a - 5x}{2} = -4b$	9) Solve for W $P = 2L + 2W$
10) Solve for y $a(y - y_0) + b(x - x_0) = 1$	11) Solve for b $\frac{a - b}{4b} = 10$	12) Solve for a $a + 1 = \frac{a + b}{3}$	13) Solve for b $A = \frac{a + b}{2} \cdot h$
14) Solve for y $x + 2 = \frac{y + x}{2}$	15) Solve for y $\frac{3y - 5x}{2} = -4$	16) Solve for x $\frac{x}{3} + \frac{2}{5} = \frac{3}{4}$	17) Solve for x $\frac{5x}{2} + \frac{8}{7} = 12x - 12$

18) Solve for y: $ax + by = c$

19) Solve for y: $3ax + by + 7 = 2(5x - 3y + 2)$

Find the equation of the line under the following criteria. Then, graph in a friendly window to check

20) The line through (6, -7) and (-2, 3)

21) The line through (-152, 78) and (-213, 93)

22) The line through (-0.0035, 0.21) and (0.0060, -0.29)

23) The line through (-0.0035, 0.21) and (0.0060, -0.29)

24) Find the equation of the line through (2, 3) and (a, b)

25) Graph (a) $y = -\frac{3}{4}x + 24$ (b) $y = -0.6x + 20$ (c) $6x - 9y = 108$ (d) $5(x - 2y) + 3x - 4y = 2x + 7$

26) Find the equation of the line through (5, -7) and parallel to $6x - 9y = 108$

27) Find the equation of the line through (-8, 12) and perpendicular to $y = -0.6x + 20$

28) Find the intersection of $y = 0.27x - 200$ & $y = -2.6x + 200$

29) Find the intersection of $y = 0.27x - 200$ & $0.02x + 0.005y = 12$

30) Find all intercepts for $y = -0.02x^2 + 4.2x$

31) Bob got $100 for Christmas which he used to open a savings account. He's planning to save up to buy a jacket. Each week he puts an additional $12 in the bank.

(a) Let x = weeks, y = dollars. Write a linear equation for the acct balance after x weeks.

(b) Graph your equations in a friendly window

(c) What is his balance after one year?

(d) How long until his balance is at least $250.

32) Betty buys snack bags for $1.40 each. She also must buy a delivery bike for $400. She sells the snack bags from her bike for $3.00 each.

(a) Let x = snack bags, y = dollars. Write a linear equation for the total expenses when buying x-bags.

(b) Write a linear equation for her revenues when selling x-bags.

(c) Graph your equations in a friendly window.

(d) Interpret the meaning of each intercept.

(e) Interpret the meaning of the lines' intersection.

(f) How many snack bags must she sell to breakeven?

(g) How many snack bags must she sell to make $1,000?

33) The county wants to repave a 35 mile section of road but it cannot afford it. They decide to repave part of the road ($80,000/mi) and chip-seal the remaining portion ($16,000/mi).

(a) Draw a diagram for the above problem. Let x be position switching from repaving to chip-sealing.

(b) Let x = miles paved. How many miles are chip-sealed?

(c) Write an equation for the total cost of repaving + chip-sealing the 35 mile section.

(d) Graph your equation in a friendly window.

(e) How much will it cost to repave 20 miles and chip-seal 15 miles?

(e) How many miles can be paved if the budget is limited to $1.5 million?