

**Math 103**  
**Fall 2011**  
**Exam 1**

**Name:**

1. 10 pts. each Solve each equation.
  - (a)  $-4t + 5t - 8 + 4 = 6t - 4$
  - (b)  $2x + 3(x - 4) = 2(x - 3)$
2. 10 pts. Solve for  $h$ :  $\mathcal{A} = \frac{1}{2}h(b + B)$ .
3. 10 pts. At the end of the day, Larry Stooze found that the total cash register receipts at the Taco Hell where he works amounted to \$1945. This included a 6% sales tax charged. Find the amount of the tax, rounded to the nearest cent.
4. 10 pts. In the 2008 presidential election, Barack Obama and John McCain together received 538 electoral votes. Barry got 192 more votes than Old Man McCain. How many votes did each candidate receive?
5. 15 pts. How many liters of a 16% alcohol solution must be mixed with 22 liters of a 68% solution to obtain a 55% solution? Round to the nearest tenth of a liter.
6. 10 pts. each Solve each inequality, then state the solution set in interval notation. Also graph the solution set.
  - (a)  $2 - 3x < -31$
  - (b)  $-16 \leq 3t + 2 \leq 5$
7. 10 pts. each Solve each compound inequality, then state the solution set in interval notation.
  - (a)  $x + 5 \leq 20$  and  $x - 3 \geq -10$
  - (b)  $3x < x + 24$  or  $x + 1 > 17$
8. 10 pts. Solve the absolute value equation  $|8 - 3x| = 16$ .
9. 10 pts. each Solve each absolute value inequality, then state the solution set in interval notation.
  - (a)  $|3r - 1| > 8$
  - (b)  $|y + 5| - 6 \leq -1$
  - (c)  $|z - 9| < -5$
10. 10 pts. Find the  $x$ - and  $y$ -intercepts for  $5x + 2y = 10$ , then graph the equation.
11. 10 pts. Find the midpoint of the segment with the endpoints  $(2, -3)$  and  $(7, -8)$ .
12. 10 pts. Determine whether the lines  $2x = y + 3$  and  $2y + x = 3$  are parallel, perpendicular, or neither.
13. 10 pts. Find an equation of the line passing through the points  $(-2, 5)$  and  $(-8, 10)$ . Write the equation in standard form and also in slope-intercept form.
14. 10 pts. Find an equation of the line through  $(-2, 5)$  and parallel to  $4x - y = 7$ . Write the equation in standard form and also in slope-intercept form.
15. 10 pts. each Simplify each, writing the answer with only positive exponents.
  - (a)  $4x^{-3}$
  - (b)  $(k^5)^{-2}k^7$