

MATH 103
SPRING 2014
EXAM 1

NAME:

1. 10 pts. each Solve each equation.

 - (a) $2 - (x + 5) = 4x + 8$
 - (b) $\frac{1}{2}x = \frac{4}{5}x - \frac{1}{4}$
2. 10 pts. Solve for F : $C = \frac{5}{9}(F - 32)$.
3. 10 pts. In a triangle with two sides of equal length, the third side measures 15 cm less than the sum of the two equal sides. The perimeter of the triangle is 53 cm. Find the lengths of the three sides.
4. 15 pts. Darth Sidious is shopping for a Sith Lord suit for his new apprentice, Darth Vader. Being strong with the Force, Sidious knows **Evil Overlords Я Us** and **Wal-Mart** have one particularly suitable suit selling at the same price, but his mind is occupied by matters of galactic import so he cannot divine what the price is. Upon becoming Emperor, Sidious gets two e-mails: One from **Evil Overlords Я Us** offering the suit at 37% off the original price, and another from **Wal-Mart** offering the suit for \$50 off the original price. After visiting both stores, Sidious finds that the discounted prices for the suit at the two stores are also the same. Determine the original price of the suit.
5. 15 pts. How much of an 80% dye solution must be added to 8 liters of a 30% dye solution to increase the solution's concentration to 65%?
6. 10 pts. each Solve each inequality, then state the solution set in interval notation. Also graph the solution set.

 - (a) $2 - 3x < -25$
 - (b) $-11 \leq 2t - 5 \leq 7$
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) $4x < x + 24$ or $2x - 1 > 19$
8. 10 pts. Solve the absolute value equation $|7 - 3x| = 16$.
9. 10 pts. each Solve each absolute value inequality, then state the solution set in interval notation.

 - (a) $|3r - 1| > 11$
 - (b) $|z - 2| + 6 \leq -2$

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 $(6, -8)$.
12. 10 pts. Determine whether the lines given by $2x = y + 3$ and $2y + x = 3$ are parallel, perpendicular, or neither.
13. 10 pts. Find an equation of the line containing the points $(-2, 6)$ 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 $(-2, -3)$ 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) $2p^{-3}$
- (b) $(v^5)^{-4}v^8$
- (c) $\frac{(2k)^2m^{-6}}{(km)^{-3}}$