BLC150–Algebra Workshop
Homework 2

Name:

1. Solve these. Hint: Leonardo of Pisa.

a. $2x^2 - 15 = -13$	b. $x^2 + 4 = 8$
c. $6x^2 = 54$	d. $\frac{x^2-1}{2} = 12$
e. $\sqrt{3x + 1} = 5$	f. $\frac{\sqrt{x+23}}{3} + 1 = 3$
g. $\frac{\sqrt{x+4}}{5} + 12 = 13$	h. $5\left(8 - \sqrt{x - 18}\right) = 20$

2. Compute the x-value from 1h (above) divided by the x-value of 1g (above).

I.e. $\frac{answer\ to\ 1h}{answer\ to\ 1g} =$ This is approximately the Golden Ratio, φ.

3. Simplify the following expressions:

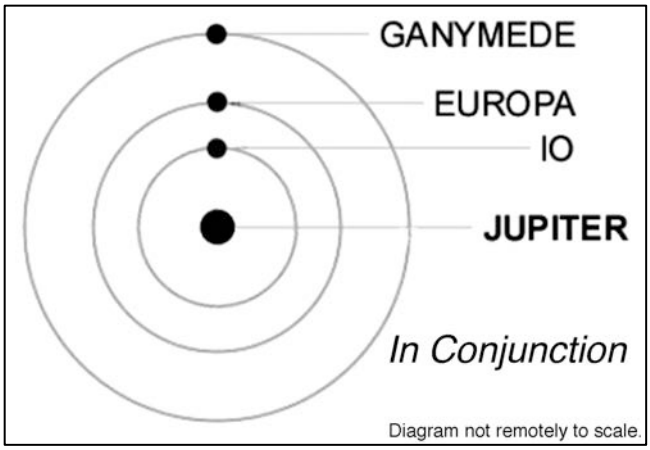
a. $4xy + 3y^2 + 4y - y^2 + 6xy - 2y(5x + 2y + 2)$	b. $2x + 3y^2 - 5y(x + 2y) + 7y^2 + \frac{10x^2y}{2x} - 2x$

4. Find all solutions to the following system of equations:

a. $x + y = 5$ $3x - 2y = 5$
b. $4x - y = 7$ $5x - 2y = 5$

5. What three consecutive even numbers add up to 636.

6. Using a 5-dollar-bill you buy a Snickers™ bar from a vending machine for $0.77. Your change comes back in equal numbers of dollar bills, quarters, dimes, nickels, and pennies. How many nickels did you receive?



7a. The orbital period of Io (one of Jupiter's moons) is approximately 1.75 earth-days.* Europa's period is twice as long as Io's. Ganymede's is twice as long as Europa's. If all three moons are in conjunction at 12:00 as shown above, how long will it take for them to be in conjunction again at 12:00? ... and again... and again..

Extra Credit. Now lets up the ante. [This is pretty hard.] Callisto is another of Jupiter's moons. It has an orbital period of 16.66 days. If all 4 moons are in conjunction (at 12:00), how long until all 4 are in conjunction again (at 12:00)?

* All of the orbital periods in this problem and the next are approximations.