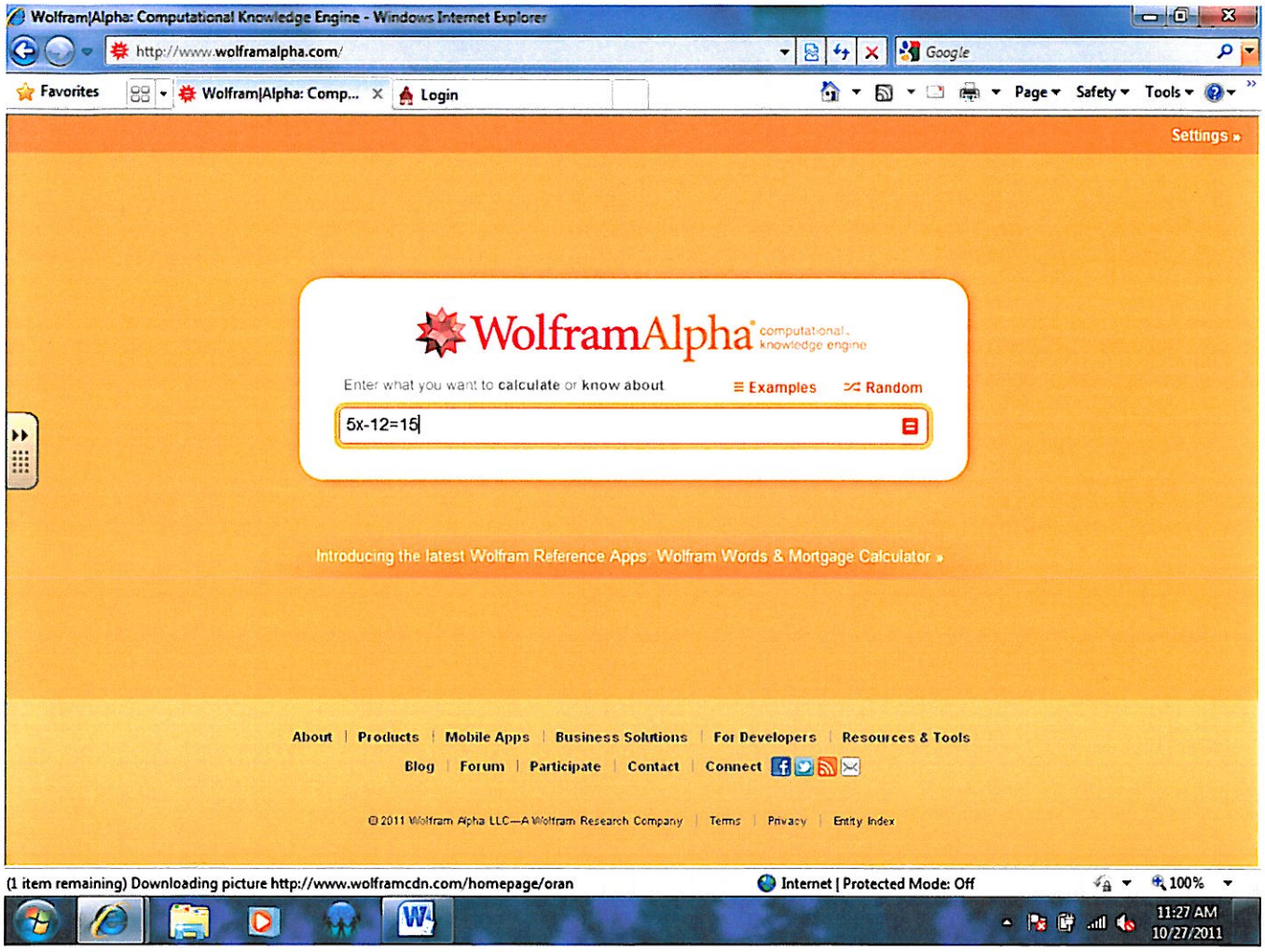
Goal: To use internet resources to solve equations.

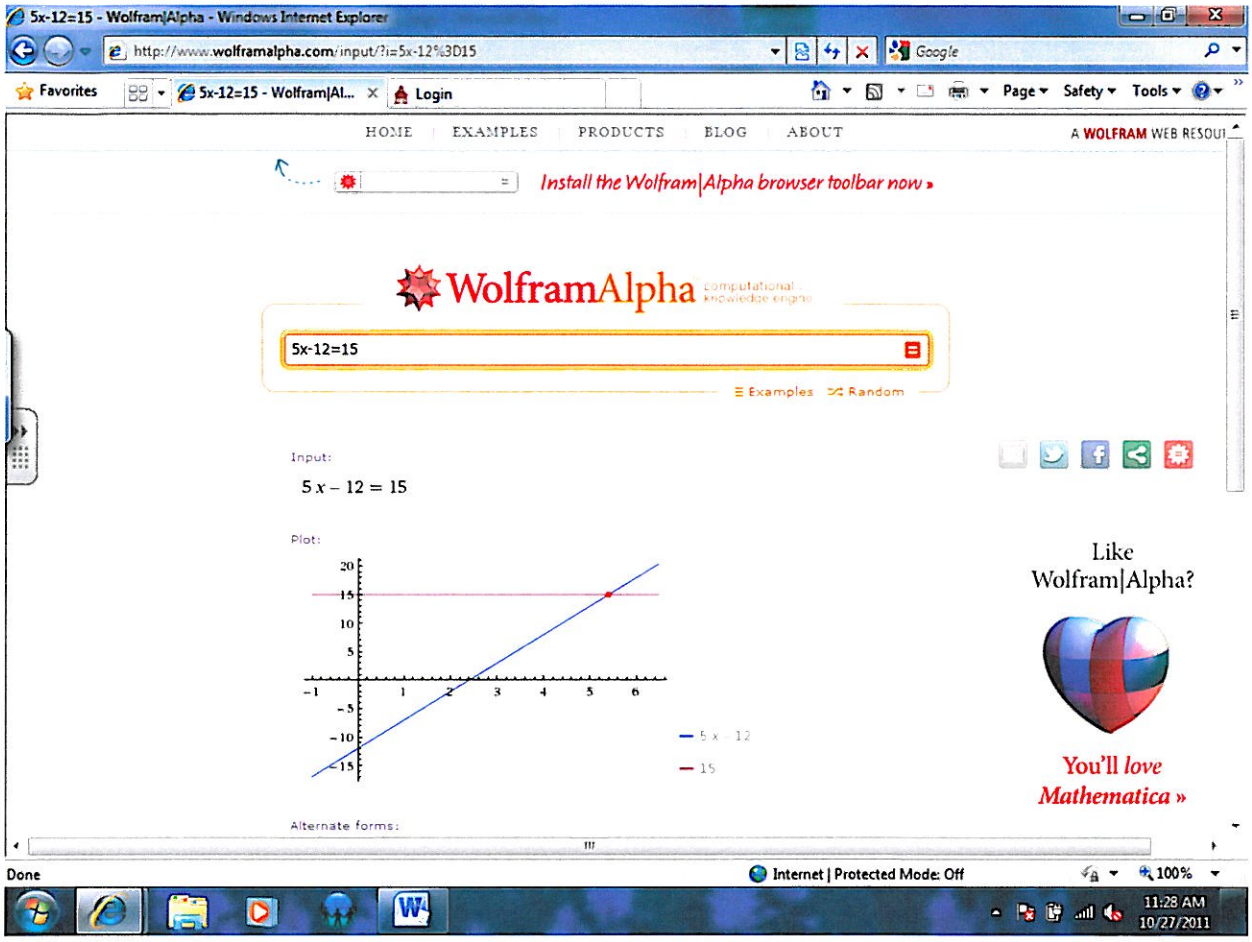
There are websites that will solve equations and inequalities for us. We will look at one today: www.wolframalpha.com. To extend the lesson you may find others and include on your worksheet what they are with examples. It is important to know how to enter equations properly, so you may need to do some searching on how to enter certain mathematical operations such as exponents and absolute value (often this will be very similar to your graphing calculator).

When you go to the website, the first page should look like this.

To solve an equation, type it in the box and press the Enter key or click on the = button. For example, to solve the equation 5x – 12 = 15 the screen should look like this.



When you click the = button you will see a screen that looks like this.



Scroll down to see the solution of 27/5. You will also see some other information about your equation. The graphs are done as if each side was equal to y. So the blue one is y=5x – 12 and the other one is y=15. The x-coordinate of the intersection point is the solution of the equation. The program also gives alternate forms of the equation which are equations that have the same solution as your equation. There is even a number line displaying the solution.

Your assignment is to use www.wolframalpha.com to solve the equations and answer the questions on the following worksheet. You may print the worksheet and turn it in when we return to school. If you do not have a printer, you may write the questions and your solutions on a piece of paper and turn that in when we return.

ALGEBRA II / PRECALCULUS

eDay Lesson 1 – Equations

Date: _____ Name: _____

Use www.wolframalpha.com to solve the following equations or inequalities.

1. $x^2 - 5 = 20$
2. $\frac{1}{7}y = \frac{13}{20}$
3. $x^4 = 8\left(x^2 - 2\right)$
4. $x^3 > 4x$
5. $x^2\left(x^2 + 4\right) \le 4x^3$
6. $\frac{y(2y-1)}{4} + \frac{3}{10} = \frac{y(y+2)}{5}$
7. $\frac{\frac{1}{x^2} - x^2}{\frac{1}{x} + x} = \frac{3}{2}$
8. $\left(\frac{t+3}{t-1}\right)^2 = 2 + \frac{t+3}{t-1}$
9. $\sqrt{n+6} - \sqrt{n} = 6$
10. $\left|4x^2 - 3\right| < 7$
11. $3e^{2x} = 8$
12. $2\ln x = \ln(x+1)$
13. $2\sin 2\theta = 2\sin\theta$
14. $\sin 4x = \cos 2x$

Answer the following questions, related to solving equations using www.wolframalpha.com. You may need to try different examples than those given above.

15. When fractional answers result, does wolframalpha give the results as mixed numbers, improper fractions, or decimals? (Provide an example of an equation different than the ones above that demonstrates the accuracy of your answer and provide the solution of your equation.)

16. How are exponents entered in wolframalpha?

17. Wolframalpha attempts to give exact answers. Find the decimal equivalent to the number $5 + \sqrt{3}$ to the nearest millionth.

18. Approximate *pi* to 15 decimal places.