Advanced Math Week #6
Distributed Practice
Due Monday March 8th

1. Determine all complex roots for the equation $x^3 + 27 = 0$

2. Simplify $\frac{1+\tan^2\theta}{\sec\theta}$ and represent it in terms of one of the 6 basic trigonometric functions we have discussed.

3. The game of Powerball Lottery draws five white balls out of a drum with 59 balls and one red ball out of a drum with 39 red balls. State the probability of winning the jackpot in fractional form.

4. Solve $\tan^2\theta + \tan\theta - 2 = 0$ over the interval $0° \le \theta \le 360°$. (Hint: replace tanθ with a variable and solve)

5. Determine the number of diagonals in a 32-sided figure.

6. A bacteria has the ability to quadruple every 3 hours. How long will it take 1 bacterium to increase from a count of 1 to a count of 1,000,000?

7. A rock is thrown upwards from the edge of a cliff and has a position function given as $f(t) = -16t^2 + 15t + 50$. Determine its exact velocity at t = 5 seconds.