THE BLACK SCHOLES EQUATIONS

$$C = \Phi(d_1)S - \Phi(d_2)Ke^{-rt}$$
$$P = \Phi(-d_2)Ke^{-rt} - \Phi(-d_1)S$$

$$d_1 = \frac{1}{\sigma\sqrt{t}}\left[\ln\left(\frac{S}{K}\right) + \left(r + \frac{\sigma^2}{2}\right)t\right]$$
$$d_2 = d_1 - \sigma\sqrt{t}$$

- C, P = Call Price, Put Price
- S, K = Stock Price, Strike Price
- t, r = time to expiration (years), risk free rate (annualized)
- σ, Φ = implied volatility, CDF of the Normal Distribution