$$M = P \cdot \frac{J}{1-(1+J)^{-N}}$$

$$\frac{-b \pm \sqrt{b^2-4ac}}{2a}$$

$$x = \frac{n}{x}$$
$$x^2 = n$$
$$x = \sqrt{n}$$

$$\begin{bmatrix} 1 & 0 & 0 \\ 0 & \cos\theta & -\sin\theta \\ 0 & \sin\theta & \cos\theta \end{bmatrix}$$

$$v_i' = \sum_{j=1}^{n} A_{ij} \cdot v_j$$

$$\sigma = \sqrt{\frac{1}{n-1}\sum_{i=1}^{n}(x_i-\mu)^2}$$

$$f(x) = \sqrt{x}$$

$$F = \frac{Gm_1m_2}{r^2}$$

$$d = \sqrt{(x_1-x_2)^2+(y_1-y_2)^2+(z_1-z_2)^2}$$

$$d = \sqrt{(x_1-x_2)^2+(y_1-y_2)^2}$$

$$\mathbf{F}_{ab} = -G\frac{m_a m_b}{|\mathbf{r}_{ab}|^2}\hat{\mathbf{r}}_{ab}$$

$$\hat{\mathbf{r}}_{ab} = \frac{\mathbf{r}_b - \mathbf{r}_a}{|\mathbf{r}_b - \mathbf{r}_a|}$$

$$S = \sum_{i=1}^{N} f\left(a_i\right)$$

$$S_1 = \sum_{i=1}^{\lfloor \frac{N}{2} \rfloor} f\left(a_i\right) \qquad S_2 = \sum_{i=\lfloor \frac{N}{2} \rfloor + 1}^{N} f\left(a_i\right)$$

$$\text{speedup} = \frac{t_s}{t_c} = \frac{4,100}{1,660,000} = 0.00246$$

$$C_{ij} = \sum_{k=1}^{n} A_{ik} B_{kj} = A_{i1}B_{1j} + A_{i2}B_{2j} + \ldots + A_{in}B_{nj}$$

$$y = \sqrt{r^2 - x^2}$$

$$F = k_e \frac{q_1 q_2}{r^2}$$

$$E = k_e \frac{q}{r^2}$$

$$age(year) = \begin{cases} 0 & \text{if you were born in } year \quad \text{(Base Case)} \\ 1 + age(year - 1) & \text{if you were born before } year \quad \text{(Recursive Case)} \end{cases}$$

$$x \cdot y = \begin{cases} x & \text{if } y = 1 \quad \text{(Base Case)} \\ x + (x \cdot (y - 1)) & \text{if } y > 1 \quad \text{(Recursive Case)} \end{cases}$$

$$n! = \begin{cases} 1 & \text{if } n = 0 \quad \text{(Base Case)} \\ n \cdot (n-1)! & \text{if } n > 0 \quad \text{(Recursive Case)} \end{cases}$$

$$F_n = \begin{cases} 1 & \text{if } n = 0 \text{ or } n = 1 \quad \text{(Base Cases)} \\ F_{n-1} + F_{n-2} & \text{if } n > 1 \quad \text{(Recursive Case)} \end{cases}$$

$$a^n = \begin{cases} a & \text{if } n = 1 \quad \text{(Base case)} \\ a \cdot a^{n-1} & \text{if } n > 1 \quad \text{(Recursive case)} \end{cases}$$

$$a^n = \begin{cases} a & \text{if } n = 1 \quad \text{(Base Case)} \\ \left(a^{\frac{n}{2}}\right)^2 & \text{if } n > 1 \quad \text{(Recursive Case)} \end{cases}$$

$$\left(\frac{1}{2}\right)^x \cdot n = 1$$
$$2^x \left(\frac{1}{2}\right)^x \cdot n = 2^x$$
$$n = 2^x$$
$$2^k = 2^x$$
$$k = x$$
$$\log_2 n = x$$

$$a^n = \begin{cases} a & \text{if } n = 1 \quad \text{(Base Case)} \\ \left(a^{\frac{n}{2}}\right)^2 & \text{if } n > 1 \text{ and even} \quad \text{(Recursive Case)} \\ a \cdot \left(a^{\frac{n-1}{2}}\right)^2 & \text{if } n > 1 \text{ and odd} \quad \text{(Recursive Case)} \end{cases}$$

$$F_n = \frac{\left(\frac{1+\sqrt{5}}{2}\right)^{n+1} - \left(\frac{1-\sqrt{5}}{2}\right)^{n+1}}{\sqrt{5}}$$