The answers to these problems can be obtained from each matrix, but to use them you must be able to use the definitions I gave you. Rows are the i'th element and columns are the j'th element. The limits were taken to infinity. The most zeros column wise correspond to the fastest growing function and the most infinities the slowest, the inverse of this statement is true for row wise elements.

In[41]:=
```
problem2 = {Sum[2^i, {i, 0, n}], n^2,
  n^(0.9999999) Log[2, n], (1.00001)^n, Log[2, 2^(n/2)], 1000000 n}
```

Out[41]= $\left\{-1+2^{1+n},\ n^2,\ \frac{n^{1.}\ \text{Log}[n]}{\text{Log}[2]},\ 1.00001^n,\ \frac{\text{Log}\left[2^{n/2}\right]}{\text{Log}[2]},\ 1000000\ n\right\}$

In[42]:=
```
MatrixForm[Table[Limit[problem2[[i]] / problem2[[j]], n → Infinity], {i, 1, 6}, {j, 1, 6}]]
```

Out[42]//MatrixForm=

$$\begin{pmatrix} 1 & \infty & \infty & \infty & \infty & \infty \\ 0 & 1 & \infty & 0. & \infty & \infty \\ 0. & 0. & 1. & 0. & 0. & 0. \\ 0. & \infty & \infty & 1. & \infty & \infty \\ 0 & 0 & \infty & 0. & 1 & \frac{1}{2000000} \\ 0 & 0 & \infty & 0. & 2000000 & 1 \end{pmatrix}$$

In[43]:=
```
problem3 =
 {n^(5/3), Sum[(i + 1), {i, 0, n}], n * Sqrt[n], 2^(n/2), Log[2, Log[2, n]], n^(1.5)}
```

Out[43]= $\left\{n^{5/3},\ \frac{1}{2}\ (1+n)\ (2+n),\ n^{3/2},\ 2^{n/2},\ \frac{\text{Log}\left[\frac{\text{Log}[n]}{\text{Log}[2]}\right]}{\text{Log}[2]},\ n^{1.5}\right\}$

In[44]:=
```
MatrixForm[Table[Limit[problem3[[i]] / problem3[[j]], n → Infinity], {i, 1, 6}, {j, 1, 6}]]
```

Out[44]//MatrixForm=

$$\begin{pmatrix} 1 & 0 & \infty & 0 & \infty & \infty \\ \infty & 1 & \infty & 0 & \infty & \infty \\ 0 & 0 & 1 & 0 & \infty & 1. \\ \infty & \infty & \infty & 1 & \infty & \infty \\ 0 & 0 & 0 & 0 & 1 & 0. \\ 0. & 0. & 1. & 0. & \infty & 1. \end{pmatrix}$$