\[ F_N(k) = \frac{1}{\sqrt{N}} e^{-\frac{1}{2} ikw/N}, \quad (w=0..N-1) \]

The equation above represents the Discrete Fourier Transform (DFT). It transforms a sequence of \( N \) complex numbers from the time domain to the frequency domain. The DFT is defined as:

\[ F_N(k) = \frac{1}{\sqrt{N}} \sum_{n=0}^{N-1} x(n) e^{-2\pi i nk/N} \]

where \( x(n) \) is the input sequence and \( F_N(k) \) is the output sequence in the frequency domain.

For \( k = 0, 1, \ldots, N-1 \), the DFT outputs are the coefficients of the frequency components of the input sequence. The magnitude of these coefficients gives the strength of each frequency component, and the phase indicates the phase shift of that component relative to the reference frequency.
Let $A$ and $B$ be two functions (or blending functions) such that:

$$\forall (x,y) \in \mathbb{R}^2, \quad \alpha (x,y) \leq A(x,y) \leq \beta (x,y)$$

and

$$\alpha (x,y) \leq B(x,y) \leq \beta (x,y)$$

where $\alpha$ and $\beta$ are piecewise linear functions.

The pyramid blending function $\beta$ can be defined as:

$$\beta (x,y) = \frac{x}{y} \alpha (x,y) + \frac{y}{x} \beta (x,y)$$

where $\alpha$ and $\beta$ are the two blending functions.

In the diagram, we can see the possible combinations of $\alpha$ and $\beta$ functions.