Mixing

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Using that Mixing Parameter to Blend Two Quantities

If use the returned value from step( ) or smoothstep( ) to blend value0 to value1:

\[ T \out = \text{mix}(T \text{ value0}, T \text{ value1}, \text{float } t) \]

where T can be just about any type: float, vec2, vec3, vec4, ...

\[ \out = (1.-t) \times \text{value0} + t \times \text{value1} \]

One would expect 0 \leq t \leq 1, but that doesn’t have to be true. After all, these are just numbers.

For a fun exercise with this, change the morphing slider to go beyond 0.-1.

As we will see later, there are really good uses for going beyond the range 0.-1.

“SmoothPulse” in a Fragment Shader

Fun With One

Moral: There are many ways to turn \( [0. - 1.] \) into \( [0. - 1.] \)

Sidebar: Why Do These Two Curves Match So Closely?

The Taylor Series expansion of \( y = \sin(\pi x) \) around x=0.5 is:

\[
y = \left( 1 \cdot \frac{\pi}{2} \cdot 0.5 \right) - \left( 1 \cdot \frac{\pi^2}{2!} \cdot 0.5^2 \right) + \left( 1 \cdot \frac{\pi^3}{3!} \cdot 0.5^3 \right) - \cdots \\
= 0.038 - 3.73 + 3.88x^2 - 2.58x^3
\]

which is pretty close to:

\[ y = 3x^3 - 2x^2 \]
Both go from 0. to 1.
Both have initial and final slopes of 0.
The quintic has initial and final curvatures of 0.