

# Embedding LaTeX Math in AsciiDoc dblettx documents

<b>REVISION HISTORY</b>			
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You can include **LaTeX math** equations in AsciiDoc documents that are processed by *dblettx*.

## 1 Inline equations

This markup:

```
An inline equation latexmath:[ $C = \alpha + \beta Y^\gamma + \epsilon$ ]
```

```
using the 'math' inline macro.  
  
You can use the same 'math' macro to inject arbitrary latexmath:[\LaTeX] markup  
(but beware, this is an undocumented trick).
```

Renders:

An inline equation  $C = \alpha + \beta Y^\gamma + \epsilon$  using the *math* inline macro.

You can use the same *math* macro to inject arbitrary  $\LaTeX$ markup (but beware, this is an undocumented trick).

## 2 Informal equations

Informal (untitled) equations are generated with a *math* style passthrough delimited block. This markup:

```
[latexmath]  
++++  
\[C = \alpha + \beta Y^\gamma + \epsilon\  
++++
```

Renders:

$$C = \alpha + \beta Y^\gamma + \epsilon$$

Functionally identical block macro syntax:

```
latexmath::[\[C = \alpha + \beta Y^\gamma + \epsilon\]]
```

Renders:

$$C = \alpha + \beta Y^\gamma + \epsilon$$

## 3 Formal equations

Formal equations are titled and are generated with a *math* style passthrough delimited block.

This markup:

```
.Unnumbered  
[latexmath]  
++++  
\[C = \alpha + \beta Y^\gamma + \epsilon\  
++++
```

Renders:

$$C = \alpha + \beta Y^\gamma + \epsilon$$

EQUATION 3.1: Unnumbered

This markup:

```
.Aligned
[latexmath]
+++++
\begin{align*}
2x^2 + 3(x-1)(x-2) &= 2x^2 + 3(x^2-3x+2) \\
&= 2x^2 + 3x^2 - 9x + 6 \\
&= 5x^2 - 9x + 6
\end{align*}
+++++
```

Renders:

$$\begin{aligned}
 2x^2 + 3(x-1)(x-2) &= 2x^2 + 3(x^2 - 3x + 2) \\
 &= 2x^2 + 3x^2 - 9x + 6 \\
 &= 5x^2 - 9x + 6
 \end{aligned}$$

EQUATION 3.2: Aligned

This markup:

```
.Array
[latexmath]
+++++
\begin{eqnarray}
x &= & \frac{-7 \pm \sqrt{49 - 24}}{6} \\
&= & -2 \text{ or } -\frac{1}{3}
\end{eqnarray}
+++++
```

Renders:

$$\begin{aligned}
 x &= \frac{-7 \pm \sqrt{49 - 24}}{6} & (1) \\
 &= -2 \text{ or } -\frac{1}{3} & (2)
 \end{aligned}$$

EQUATION 3.3: Array

This markup:

```
.Array
[latexmath]
+++++
\begin{eqnarray*}
4r^2 \int_0^{\pi/2} \cos^2 \theta \, d\theta \\
&= & 4r^2 \int_0^{\pi/2} \frac{1}{2} (1 + \cos 2\theta) \, d\theta \\
&= & \{2r^2 \theta\} \Big|_0^{\pi/2} \\
& \quad + 2r^2 \int_0^{\pi/2} \cos 2\theta \, d\theta \\
&= & \pi r^2 + 2r^2 (\sin 2\theta) \Big|_0^{\pi/2} \\
&= & \pi r^2
\end{eqnarray*}
+++++
```

Renders:

$$\begin{aligned}
 4r^2 \int_0^{\pi/2} \cos^2 \theta d\theta &= 4r^2 \int_0^{\pi/2} \frac{1}{2}(1 + \cos 2\theta) d\theta \\
 &= 2r^2 \theta \Big|_0^{\pi/2} + 2r^2 \int_0^{\pi/2} \cos 2\theta d\theta \\
 &= \pi r^2 + 2r^2 (\sin 2\theta) \Big|_0^{\pi/2} \\
 &= \pi r^2
 \end{aligned}$$

EQUATION 3.4: Array

This markup:

```

.List
[latexmath]
+++++
\begin{enumerate}
\item $\frac{da}{dx} = 0$
\item $\frac{d}{dx} ax = a$
\item $\frac{d}{dx} x^n = nx^{n-1}$
\item $\displaystyle \frac{d}{dx} (f(x) + g(x))
= \frac{d}{dx} f(x) + \frac{d}{dx} g(x)$
\item $\displaystyle \frac{d}{dx} f(x)g(x)
= g(x) \frac{d}{dx} f(x) + f(x) \frac{d}{dx} g(x)$
\item $\displaystyle \frac{d}{dx} \frac{f(x)}{g(x)}
= \frac{g(x) \frac{d}{dx} f(x) - f(x) \frac{d}{dx} g(x)}{(g(x))^2}$
\end{enumerate}
+++++
    
```

Renders:

1.  $\frac{da}{dx} = 0$
2.  $\frac{d}{dx} ax = a$
3.  $\frac{d}{dx} x^n = nx^{n-1}$
4.  $\frac{d}{dx} (f(x) + g(x)) = \frac{d}{dx} f(x) + \frac{d}{dx} g(x)$
5.  $\frac{d}{dx} f(x)g(x) = g(x) \frac{d}{dx} f(x) + f(x) \frac{d}{dx} g(x)$
6.  $\frac{d}{dx} \frac{f(x)}{g(x)} = \frac{g(x) \frac{d}{dx} f(x) - f(x) \frac{d}{dx} g(x)}{(g(x))^2}$

EQUATION 3.5: List

This markup:

```

.Matrix
[latexmath]
+++++
    
```

```
\[ P^{e \rightarrow c} = \left[
\begin{array}{*{3}{r@{}}l}
& \cos \theta & & \sin \theta \sin \varphi & & \sin \theta \cos \varphi \\
& \sin \theta \sin \psi & & \cos \varphi \cos \psi - \cos \theta \sin \varphi \sin \psi & & -\sin \varphi \cos \psi - \cos \theta \cos \varphi \sin \psi \\
& -\sin \theta \cos \psi & & \cos \varphi \sin \psi + \cos \theta \sin \varphi \cos \psi & & -\sin \varphi \sin \psi + \cos \theta \cos \varphi \cos \psi
\end{array}
\right]
```

Renders:

$$P^{e \rightarrow c} = \begin{bmatrix} \cos \theta & \sin \theta \sin \varphi & \sin \theta \cos \varphi \\ \sin \theta \sin \psi & \cos \varphi \cos \psi - \cos \theta \sin \varphi \sin \psi & -\sin \varphi \cos \psi - \cos \theta \cos \varphi \sin \psi \\ -\sin \theta \cos \psi & \cos \varphi \sin \psi + \cos \theta \sin \varphi \cos \psi & -\sin \varphi \sin \psi + \cos \theta \cos \varphi \cos \psi \end{bmatrix}$$

EQUATION 3.6: Matrix