

## Enhancement Details: PTC Mathcad Prime 3.0

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# Enhancement Details

## PTC Mathcad base product

### [Copy a Single Region to an External Application](#)

You can select a single region and then copy it to an external application as an image.

### [Create a Contour Plot from an Expression](#)

You can plot a contour directly from an expression.

### [Custom Functions](#)

You can integrate your own functions, written in C++ or other languages, into the PTC Mathcad environment.

### [Editing Equations is Easier](#)

You can edit math by typing over the existing equation with a new equation.

### [Formatting Math](#)

You can specify font, font size, color, and highlighting for equations at a region or worksheet level.

### [Global Definition Operator](#)

Use the Global Definition operator to define a variable you can use anywhere in your worksheet.

### [Increased Number of Points on an XY Plot](#)

You can have up to 500,000 points on an XY plot.

### [Live Math in Text](#)

You can directly write or copy live math into text.

### [Matrix Decomposition Functions](#)

LU, QR, and Cholesky functions are added as replacements for lu, qr, and cholesky functions.

### [New Look for Regions](#)

The look of regions when selected or activated is improved.

### [Templates are Available](#)

You can create, edit, organize and use templates as the basis for new worksheets. Templates can contain any calculation or document formatting content.

### [Unconstrained Optimization](#)

You can use Maximize() and Minimize() without constraints outside of a solve block.

### [Waterfall Plot Type is the Default for Matrices](#)

The default plot type for Axis expressions that evaluate to a matrix, is waterfall.

# Enhancement Details

## base product

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# Enhancement Details

## Copy a Single Region to an External Application

You can select a single region and then copy it to an external application as an image.

### Product Information

Product	PTC Mathcad base product
PTC Support Release	Prime 3.0
Product Functional Area	base product
User Interface Location	In the worksheet, select a region to copy to the clipboard then paste it into any external document as an image.
Processes, Initiatives, and Best Practices	

### Benefits and Description

You can copy a single region and then paste it as an image in external applications. Any region type can be copied, including Plots, Solve Blocks, and Areas.

# Enhancement Details

## Create a Contour Plot from an Expression

You can plot a contour directly from an expression.

### Product Information

Product	PTC Mathcad base product
PTC Support Release	Prime 3.0
Product Functional Area	base product
User Interface Location	Type the expression directly into the Contour Plot.
Processes, Initiatives, and Best Practices	

### Benefits and Description

You can create contour plot from an expression by typing the expression directly into the plot. This results in simpler syntax and consistency with 3D plots.

# Enhancement Details

## Custom Functions

You can integrate your own functions, written in C++ or other languages, into the PTC Mathcad environment.

### Product Information

<b>Product</b>	PTC Mathcad base product
<b>PTC Support Release</b>	Prime 3.0
<b>Product Functional Area</b>	base product
<b>User Interface Location</b>	Write and evaluate your custom functions within the PTC Mathcad worksheet.
<b>Processes, Initiatives, and Best Practices</b>	

### Benefits and Description

You can use custom functions to extend the functionality of PTC Mathcad by integrating them in the PTC Mathcad environment.

Custom functions can have many of the same features as PTC Mathcad built-in functions, such as those listed below:

- Customized error messages
- Interruption and exception handling in case of overflow
- Divide by zero.

Custom functions can take any number of parameters and return a value that is a complex scalar, complex matrix, or a string. You can group a set of custom functions in a Dynamic Link Library (DLL). One or more DLLs can be added to the PTC Mathcad installation at the same time.

# Enhancement Details

## Editing Equations is Easier

You can edit math by typing over the existing equation with a new equation.

### Product Information

Product	PTC Mathcad base product
PTC Support Release	Prime 3.0
Product Functional Area	base product
User Interface Location	Select an equation and then type over it.
Processes, Initiatives, and Best Practices	

### Benefits and Description

You can edit an equation by selecting it and then typing the new content. The old content is replaced by the new content. This is supported in all regions.

# Enhancement Details

## Formatting Math

You can specify font, font size, color, and highlighting for equations at a region or worksheet level.

### Product Information

Product	PTC Mathcad base product
PTC Support Release	Prime 3.0
Product Functional Area	base product
User Interface Location	Click Math Formatting and then select from options in the Math Font group.
Processes, Initiatives, and Best Practices	

### Benefits and Description

You can specify font, font size, color, and highlighting for equations to suit personal, company, or industry standard documentation expectations. You can format math at a worksheet or region level by changing math formatting options. Region-level formatting takes precedence over worksheet-level formatting. To change math formatting to the default settings click Remove Format.



# Enhancement Details

## Global Definition Operator

Use the Global Definition operator to define a variable you can use anywhere in your worksheet.

### Product Information

Product	PTC Mathcad base product
PTC Support Release	Prime 3.0
Product Functional Area	base product
User Interface Location	Click Math > Operators. Under Definition and Evaluation click the Global Definition operator.
Processes, Initiatives, and Best Practices	

### Benefits and Description

You can use the Global Definition operator to define a variable anywhere in the worksheet that can then be evaluated anywhere in the worksheet.

You can define constants and parameters as true throughout the worksheet and place them close to the end result of the calculation. This is convenient for clear and concise content presentation.

# Enhancement Details

## Increased Number of Points on an XY Plot

You can have up to 500,000 points on an XY plot.

### Product Information

Product	PTC Mathcad <a href="#">base product</a>
PTC Support Release	Prime 3.0
Product Functional Area	<a href="#">base product</a>
User Interface Location	When defining range variables above the plot, set up to 500,000 points.
Processes, Initiatives, and Best Practices	

### Benefits and Description

The number of plot points for an XY plot is increased to 500,000. With this increase, you can analyze a larger volume of data.

# Enhancement Details

## Live Math in Text

You can directly write or copy live math into text.

### Product Information

<b>Product</b>	PTC Mathcad base product
<b>PTC Support Release</b>	Prime 3.0
<b>Product Functional Area</b>	base product
<b>User Interface Location</b>	When in a text region, click the Math tab and in the Regions group, click Math.
<b>Processes, Initiatives, and Best Practices</b>	

### Benefits and Description

You can insert math regions within text regions for seamless integration of math and text. Math in text is live and is used in worksheet calculation. You can insert Math into text using the ribbon command, the keyboard shortcut, or by selecting it for copy and then pasting it into a text region.

You can format and edit math within text, copy it inside or outside of the text region, and disable or enable it within the calculation.

# Enhancement Details

## Matrix Decomposition Functions

LU, QR, and Cholesky functions are added as replacements for lu, qr, and cholesky functions.

### Product Information

<b>Product</b>	PTC Mathcad base product
<b>PTC Support Release</b>	Prime 3.0
<b>Product Functional Area</b>	base product
<b>User Interface Location</b>	Click Functions > Vector and Matrix and then click LU, QR, or Cholesky.
<b>Processes, Initiatives, and Best Practices</b>	

### Benefits and Description

The LU, QR and Cholesky matrix decomposition functions are 10 to 100 times faster than the lu, qr and cholesky functions that they replace. The new functions support pivoting and complex matrices. The older lu, qr, and cholesky matrix decomposition functions are still available so existing worksheets that use them will calculate without modification.

# Enhancement Details

## New Look for Regions

The look of regions when selected or activated is improved.

### Product Information

Product	PTC Mathcad base product
PTC Support Release	Prime 3.0
Product Functional Area	base product
User Interface Location	Select or activate a region.
Processes, Initiatives, and Best Practices	

### Benefits and Description

The Selected and Activated states for regions in a worksheet are clearer, more defined, and better distinguished. When clicking the edge of a region or moving a region, the region is selected. This makes it easier to manipulate regions in the worksheet.

# Enhancement Details

## Templates are Available

You can create, edit, organize and use templates as the basis for new worksheets. Templates can contain any calculation or document formatting content.

### Product Information

<b>Product</b>	PTC Mathcad base product
<b>PTC Support Release</b>	Prime 3.0
<b>Product Functional Area</b>	base product
<b>User Interface Location</b>	Template functionality is available from the New, Open, and Save As commands.
<b>Processes, Initiatives, and Best Practices</b>	

### Benefits and Description

You can use templates when creating new PTC Mathcad worksheets. The template file can contain content you use in a regular worksheet. When creating a new worksheet, use the template file as a basis for that new worksheet. There are several default templates available or you can create templates and decide where to save them and how to organize them.

Creating templates for content you use regularly saves time and effort when creating new worksheets. Some examples of what you can do to save time with templates are listed below:

- Standardize worksheets
- Capture intellectual property (IP)
- Add content that you use regularly
- Provide formatting that use regularly

# Enhancement Details

## Unconstrained Optimization

You can use Maximize() and Minimize() without constraints outside of a solve block.

### Product Information

Product	PTC Mathcad base product
PTC Support Release	Prime 3.0
Product Functional Area	base product
User Interface Location	Click Functions > Solving > minimize or Functions > Solving > maximize.
Processes, Initiatives, and Best Practices	

### Benefits and Description

You can use Maximize() and Minimize() without constraints for simpler syntax outside of a solve block.

# Enhancement Details

## Waterfall Plot Type is the Default for Matrices

The default plot type for Axis expressions that evaluate to a matrix, is waterfall.

### Product Information

Product	PTC Mathcad base product
PTC Support Release	Prime 3.0
Product Functional Area	base product
User Interface Location	Define XY plot axis expressions as matrices.
Processes, Initiatives, and Best Practices	

### Benefits and Description

When matrices are used as axis expressions in the XY plot, the resulting plot type by default is waterfall. This enhances usability.