A MATH FONT SAMPLER

MICHAEL SHARPE

This document displays on each of the subsequent pages a single path of mathematical text such as one might find in a mix of textbooks. The text fonts are mostly not free, and the math fonts are a mix of free and non-free. The point was to show what other options are available, sometimes at either modest monetary cost, or zero monetary cost and substantial effort. The text fonts that appear here are:

- Minion Pro (Adobe).
- Utopia (Adobe, available in TEX Live).
- Libertine (Public, available in TEX Live).
- Bergamo (Fontsite) – a clone of Adobe Bembo.
- Savoy (Fontsite) – a clone of Adobe Sabon.
- Barbedor (Fontsite) – a clone of URW Barbedor.
- Garamond Premier Pro (Adobe).
- University OldStyle (Fontsite) – a clone of ITC Berkeley OldStyle.
- Caslon Pro (Adobe).
- Jenson Recut (Fontsite) – a clone of Monotype Centaur.
- Hoefler Text (Apple).
- Arno Pro (Adobe).
- Goudy Old Style (Softkey).
- Jenson Pro (Adobe).
- Warnock Pro (Adobe).

The math fonts are:

- Lucida New Math (not free.)
- txfonts (Public–part of TEX Live
- Euler (Public–part of TEX Live.)
- mathpazo (Public–part of TEX Live.)
- Mathtime Pro 2 Lite (pctex, free Lite version.) + Mathematica bold
- MnSymbol with MinionPro (MnSymbol is public–part of TEXLive.)

In addition to mtpro2 Lite with its Times letters, some of the fonts are paired with a variant of mtpro2 Lite which replaces the letters with those from another text font. The virtual math fonts produced by this method have names like z5sbmt, in which the initial character z, in the Berry fontname scheme, stands for a singular case not following the normal naming rules, 5sb is the Berry three-character code for Fontsite Savoy, and mt

signifies Mathtime. These frankenfonts were produced by TeXFontUtility, free from
`http://math.ucsd.edu/~msharpe/TeXFontUtility.dmg`
which provides an interface to the fontinst scripts and the parameters that must be passed to it. (It also provides interfaces to other fontinst scenarios and to otfinst.)

The main drawback to mtpro2 lite is, in my opinion, the lack of a good quality bold Greek alphabet. As you will see in the examples, when the bold Greek letters have to be synthesized, they do not usually provide a good match to other characters, and their shapes are sometimes awkward. It may be worth buying the full version just to get around this issue. The z fonts take bold Greek from wtmmb.

```
\usepackage[minionint,mathlf]{MinionPro}
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$$g(t) = \lim_{\varepsilon \to 0} \lim_{\lambda \to \infty} \varepsilon^{-1} \sum_{\lambda t < k \le (\lambda+\varepsilon)t} \frac{(-1)^k}{k!} \lambda^k \varphi^{(k)}(\lambda). \tag{1}$$

Solutions of systems of ODEs: Let $\mathbf{v}(\mathbf{x}, \boldsymbol{\alpha})$ denote a parametrized vector field ($\mathbf{x} \in U$, $\boldsymbol{\alpha} \in A$) where U is a domain in $\mathbb{R}^n$ and the parameter space A is a domain in $\mathbb{R}^m$. We assume that $\mathbf{v}$ is C^k-differentiable as a function of $(\mathbf{x}, \boldsymbol{\alpha})$, where $k \ge 2$. Consider a system of differential equations in U:

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$$\Gamma(z) \sim e^{-z} z^{z-1/2} \sqrt{2\pi} \left[1 + \frac{1}{12z} + \frac{1}{288z^2} - \frac{139}{51840z^3} + \cdots \right], \quad z \to \infty \text{ in } |\arg z| < \pi. \tag{3}$$

Bézier curves: Given z_1, z_2, z_3, z_4 in $\mathbb{C}$, define the Bézier curve with control points z_1, z_2, z_3, z_4 by

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\usepackage[expert,vargreek]{lucbmath}
\def\DeclareLucidaFontShape#1#2#3#4#5#6{%
 \DeclareFontShape{#1}{#2}{#3}{#4}{<->s*[0.8]#5}{#6}}% reduce to 80%
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An inversion formula: Let $g : \mathbb{R}^+ \to \mathbb{R}$ be bounded and right continuous, and let $\varphi(\alpha) \coloneqq \int_0^\infty e^{-\alpha t} g(t)\,dt$ denote its Laplace transform. Then, for every $t > 0$,

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$$\Gamma(z) \sim e^{-z} z^{z-1/2} \sqrt{2\pi} \left[1 + \frac{1}{12z} + \frac{1}{288z^2} - \frac{139}{51840z^3} + \cdots \right], \quad z \to \infty \text{ in } |\arg z| < \pi. \tag{3}$$

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\usepackage[expert,vargreek]{lucbmath}
\def\DeclareLucidaFontShape#1#2#3#4#5#6{%
 \DeclareFontShape{#1}{#2}{#3}{#4}{<->s*[0.8]#5}{#6}}% reduce to 80%
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\usepackage[oldstyle]{barbedorfs}
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\usepackage[lining]{barbedorfs}
\usepackage[expert,vargreek]{lucbmath}
\def\DeclareLucidaFontShape#1#2#3#4#5#6{%
 \DeclareFontShape{#1}{#2}{#3}{#4}{<->s*[0.85]#5}{#6}}% reduce to 85%
\renewcommand*{\rmdefault}{5baj}% set osf after math loaded
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\usepackage[expert,vargreek]{lucbmath}
\def\DeclareLucidaFontShape#1#2#3#4#5#6{%
 \DeclareFontShape{#1}{#2}{#3}{#4}{<->s*[0.90]#5}{#6}}% reduce to 90%
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 \DeclareFontShape{#1}{#2}{#3}{#4}{<->s*[0.88]#5}{#6}}% reduce to 88%
\renewcommand*{\rmdefault}{5byj}% set osf after math loaded
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\def\DeclareLucidaFontShape#1#2#3#4#5#6{%
 \DeclareFontShape{#1}{#2}{#3}{#4}{<->s*[0.88]#5}{#6}}% reduce to 88%
\renewcommand*{\rmdefault}{pacj}% set osf after math loaded
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\usepackage{eulervm}% with lining figures for math roman
\renewcommand*{\rmdefault}{5urj}% set osf after math loaded
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\usepackage[onlymath,minionint,mathlf]{MinionPro}
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\usepackage[oldstyle,scaled=1.12]{jensonrecut}
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\usepackage[expert,vargreek]{lucbmath}
\def\DeclareLucidaFontShape#1#2#3#4#5#6{%
 \DeclareFontShape{#1}{#2}{#3}{#4}{<->s*[0.9]#5}{#6}}% reduce to 90%
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\usepackage[lining]{hoeflertext}
\usepackage[expert,vargreek]{lucbmath}
\def\DeclareLucidaFontShape#1#2#3#4#5#6{%
 \DeclareFontShape{#1}{#2}{#3}{#4}{<->s*[0.83]#5}{#6}}% reduce to 83%
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\usepackage[T1]{fontenc}
\usepackage[expert,vargreek]{lucbmath}
\def\DeclareLucidaFontShape#1#2#3#4#5#6{%
 \DeclareFontShape{#1}{#2}{#3}{#4}{<->s*[0.83]#5}{#6}}% reduce to 83%
\renewcommand*{\rmdefault}{pa0j}% set osf after math loaded
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\usepackage[onlymath,minionint,mathlf]{MinionPro}
\renewcommand*{\rmdefault}{kgoj}% set osf after math loaded
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\usepackage[T1]{fontenc}
\usepackage[expert,vargreek]{lucbmath}
\def\DeclareLucidaFontShape#1#2#3#4#5#6{%
 \DeclareFontShape{#1}{#2}{#3}{#4}{<->s*[0.83]#5}{#6}}% reduce to 83%
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\usepackage[expert,vargreek]{lucbmath}
\def\DeclareLucidaFontShape#1#2#3#4#5#6{%
 \DeclareFontShape{#1}{#2}{#3}{#4}{<->s*[0.8]#5}{#6}}% reduce to 80%
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\usepackage[lining]{warnock}
\usepackage[lite,subscriptcorrection,slantedGreek]{mtpro2}% with lining figures for math roman
\renewcommand*{\rmdefault}{pwpj}% set osf after math loaded
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An inversion formula: Let $g : \mathbb{R}^+ \to \mathbb{R}$ be bounded and right continuous, and let $\varphi(\alpha) := \int_0^\infty e^{-\alpha t} g(t)\,dt$ denote its Laplace transform. Then, for every $t > 0$,

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Solutions of systems of ODEs: Let $\mathbf{v}(\mathbf{x}, \boldsymbol{\alpha})$ denote a parametrized vector field ($\mathbf{x} \in U$, $\boldsymbol{\alpha} \in A$) where U is a domain in $\mathbb{R}^n$ and the parameter space A is a domain in $\mathbb{R}^m$. We assume that $\mathbf{v}$ is C^k-differentiable as a function of $(\mathbf{x}, \boldsymbol{\alpha})$, where $k \ge 2$. Consider a system of differential equations in U:

$$\dot{\mathbf{x}} = \mathbf{v}(\mathbf{x}, \boldsymbol{\alpha}), \qquad \mathbf{x} \in U. \tag{2}$$

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$$\Gamma(z) \sim e^{-z} z^{z-1/2} \sqrt{2\pi} \left[1 + \frac{1}{12z} + \frac{1}{288z^2} - \frac{139}{51840z^3} + \cdots \right], \quad z \to \infty \text{ in } |\arg z| < \pi. \tag{3}$$

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\usepackage{mathpazo}
\usepackage[oldstyle]{warnock}
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\usepackage[lining]{warnock}
\usepackage[expert,vargreek]{lucbmath}
\def\DeclareLucidaFontShape#1#2#3#4#5#6{%
 \DeclareFontShape{#1}{#2}{#3}{#4}{<->s*[0.8]#5}{#6}}% reduce to 80%
\renewcommand*{\rmdefault}{pwpj}% set osf after math loaded
```

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