1 Exercise 1

Hello World!

1.1 Typesetting Text: Caveats

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In March 2006, Congress raised that ceiling an additional $0.79 trillion to $8.97 trillion, which is approximately 68% of GDP. As of October 4, 2008, the "Emergency Economic Stabilization Act of 2008" raised the current debt ceiling to $11.3 trillion.

1.2 Typesetting Mathematics: Dollar Signs

Let a and b be distinct positive
integers, and let c = a - b + 1.
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integers, and let $c = a - b + 1$.

Let $y = mx + b$ be ...
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1.3 Typesetting Mathematics: Notation

$y = c_2x^2 + c_1x + c_0$
$F_n = F_n - 1 + F_n - 2$
$F_n = F_{n-1} + F_{n-2}$
$\mu = Ae^{Q/RT}$
$\Omega = \sum_{k=1}^{n} \omega_k$

1.4 Typesetting Mathematics: Displayed Equations

The roots of a quadratic equation are given by

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \tag{1}$$

where a, b and c are ...

1.5 Interlude: Environments

We can write $\Omega = \sum_{k=1}^{n} \omega_k$ in text, or we can write

$$\Omega = \sum_{k=1}^{n} \omega_k \tag{2}$$

to display it.

- Biscuits
- Tea

1. Biscuits
2. Tea

1.6 Typesetting Mathematics: Examples with amsmath

$$\Omega = \sum_{k=1}^{n} \omega_k$$

$$min_{x,y}(1-x)^2 + 100(y-x^2)^2$$

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$$\beta_i = \frac{\mathrm{Cov}(R_i, R_m)}{\mathrm{Var}(R_m)}$$

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

2 Exercise 2

Let X1, X2, ..., Xn be a sequence of independent and identically distributed random variables with E[Xi] = mu and Var[Xi] = sigma squared ¡ infinity, and let

Sn = 1/n times the sum for i from 1 to n of Xi

denote their mean. Then as n approaches infinity, the random variables square root n(Sn - mu) converge in distribution to a normal N(0; sigma squared).

Let $X_1, X_2, \ldots, X_n$ be a sequence of independent and identically distributed random variables with $\mathrm{E}[X_i] = \mu$ and $\mathrm{Var}[X_i] = \sigma^2 < \infty$, and let

$$S_n = \frac{1}{n}\sum_{i=1}^{n} X_i$$

denote their mean. Then as n approaches infinity, the random variables $\sqrt{n}(S_n - \mu)$ converge in distribution to a normal $N(0, \sigma^2)$.