Writing Skills 1
Basic LaTeXCommands

1. If $s_n = a + ar + ar^2 + \cdots + ar^{n-1}$, then

$$s_n = \sum_{k=1}^{n} ar^{k-1} = \frac{a(1-r^n)}{1-r}.$$

2. Here are some useful facts from Calculus:

   (a) $\dfrac{d}{dx}(\ln x) = \dfrac{1}{x}$

   (b) Double angle formulas

   - $\sin(2x) = 2\sin x \cos x$
   - $\cos(2x) = \cos^2 x - \sin^2 x$

   (c) If $n \neq -1$, then $\displaystyle\int x^n dx = \frac{x^{n+1}}{n+1} + c$

3. If (x_1, y_1) and (x_2, y_2) are two points in the plane with $x_1 \neq x_2$, then the slope of the line through these points is

$$\frac{y_2 - y_1}{x_2 - x_1}. \tag{1}$$

   We sometimes denote the slope given in Equation (1) by m.

4. If

$$x_n = \frac{n}{n+1} \text{ and } i_k = 2k + 1,$$

   then

$$x_{i_{12}} = \frac{i_{12}}{i_{12}+1} = \frac{25}{26}.$$

5. Completing the sqaure, we see that if $y = 2x^2 + 8x + 7$, then

$$\begin{aligned} y &= 2(x^2 + 4x) + 7 \\ &= 2(x^2 + 4x + 4) + 7 - 2(4) \\ &= 2(x+2)^2 - 1. \end{aligned}$$