1. Expand the following
   (a) $(a+b)^2$.
   (b) $(a-b)^2$.
   (c) $(x-2)(x-3)(x-4)$.
   (d) $(\rho+p)(\rho^3+p^4)(p-\rho^2)$.
   (e) $\left(x^{\frac{1}{3}}+2y^{\frac{2}{3}}\right)\left(x^2-3y^5\right)$.
2. Discuss what "factor this function" means.
3. Factor the following
   (a) $4x^2+12x+9$.
   (b) $5x^2-10x+5$.
   (c) $3x^2+2\sqrt{15}x+5$.
   (d) $x^4+\sqrt{12}x^2+3$.
   (e) $4x^{2000}+28x^{1000}+49$.
   (f) $3x^2+7x-20$
4. An application of the mapping rule: Suppose you know that the shape of a rope of length $2\sinh(1)$ suspended between two poles, placed at $x=\pm 1$ and with height $\cosh(1)$, has the shape $\cosh(x)$. What function describes the shape of a rope between poles placed at $x=6,8$ with height $y=25$