1. (b) $[-3, \infty)$ and $[-\infty, 4]$

   (c) 16

2. (a) 81

   (b) -81

   (c) $\frac{1}{81}$

   (d) $5^2 = 25$

   (e) $\frac{1}{\left(\frac{2}{3}\right)^2} = \frac{1}{\frac{4}{9}} = \frac{9}{4}$

   (f) $\frac{1}{16^{\frac{3}{4}}} = \frac{1}{\sqrt[4]{16}^3} = \frac{1}{2^3} = \frac{1}{8}$

3. (a) $1.86 \cdot 10^{11}$

   (b) $3.965 \cdot 10^{-7}$

4. (a)