1. Find the domain, $x$ intercept and vertical asymptote of the function

$$
\begin{equation*}
f(x)=\log _{5}(x-4) \tag{1}
\end{equation*}
$$

2. Use the properties of logarithms to expand the expression as sum, difference or constant multiple of logarithm.

$$
\begin{equation*}
\log \left(\frac{x^{2}-3 x+2}{\sqrt[3]{x^{5}}}\right. \tag{2}
\end{equation*}
$$

3. Solve the logarithm equation.

$$
\begin{equation*}
\log _{4}(2 x+1)-\log _{4}(2 x-1)=\frac{1}{2} \tag{3}
\end{equation*}
$$

4. If $\log (x+2)=3$ and $\log (x-2)=4$, find the value of

$$
\begin{equation*}
f(x)=x^{2}-4 \tag{4}
\end{equation*}
$$

