VD Unit 3 Topic 3

Condense the following expression and change it into an assigned base.

1. (change to base 3) $\log_{\frac{1}{\sqrt{3}}}\left(\sqrt{x-3}\right)+\log_9\left(x^2+3x-18\right)$ $=\log_3\sqrt{\frac{x+6}{x-3}}$	2. (change to base 4) $\log_2\sqrt{(x-2)^3}+\log_{\frac{1}{4}}\left(x^2-4x+4\right)$ $=\log_4(x-2)$
3. (change to base 3) $\log_3\left(x^2-16\right)-\log_9\left(x^2+8x+16\right)$ $=\log_3(x-4)$	4. (change to base $\frac{1}{7}$) $\log_7(2x^2-x-3)-\log_{\sqrt{7}}(x+1)$ $=\log_{\frac{1}{7}}\left(\frac{x+1}{2x-3}\right)$
5. (change to base 8) $\frac{1}{2}\log_{64}(x-3)-\log_{2\sqrt{2}}\left(\frac{1}{\sqrt{x+3}}\right)$ $=\log_8\left((x+3)\sqrt[4]{x-3}\right)$	6. (change to common log) $\log_5(x+3)+\log_{20}(x+3)$ $=\frac{(\log 4)\log(x+3)}{1-(\log 2)^2}$
7. (change to natural log) $\log_{\sqrt{3}}(x^2-4)-\log_{\sqrt{3}}(x+2)$ $=\frac{\ln(x+2)}{\ln\sqrt{3}}$	8. (change to base 2) $\log_{\sqrt{2}}(x-2)+2\log_{\frac{1}{2}}(x^2-4)$ $=2\log_2\left(\frac{1}{x+2}\right)$