Homework #4 Part B

No explanations are required for these problems, as steps are shown clearly where needed. Please note that only some of these problems are to turn in.

1. For (a)-(c), rewrite the exponential equation as a logarithmic equation. For (d)-(f), rewrite the logarithmic equation as an exponential. Only turn in (a) and (f).
   (a): \( 100^{3/2} = 1000 \)  
   (b): \( \left(\frac{1}{2}\right)^{-3} = 8 \)  
   (c): \( \left(\frac{9}{17}\right)^{-1/2} = \frac{4}{3} \)  
   (d): \( \log_5(\sqrt{25}) = \frac{2}{3} \)  
   (e): \( \log_{100}(.001) = -\frac{3}{2} \)  
   (f): \( \log_{2/3}(\frac{27}{8}) = -3 \)

2. Evaluate each of the following expressions. Only turn in (c), (d), and (g).
   (a): \( \log_2\left(\frac{1}{16}\right) \)  
   (b): \( \log_3(\sqrt[3]{27}) \)  
   (c): \( \log_{10}(.00001) \)  
   (d): \( \log_{3/4}(\frac{\sqrt{16}}{9}) \)  
   (e): \( \log_2\left(\frac{1}{\sqrt{2}}\right) \)  
   (f): \( 2 \log_x(\sqrt{x}) - \frac{1}{3} \log_y(y^3) \)  
   (g): \( \log_5 50 - 2 \log_3 2 + \log_5 10 \)

3. Write the following expressions as a logarithm of a single expression. Only turn in (b).
   (a): \( 4 \log_2(x^{1/2}) - \frac{3}{2} \log_2(x^4) + \log_2(x) \)  
   (b): \( \log_3\left(\frac{x^2}{y^3}\right) - 3 \log_3(y^{-1}) - 2 \log_3\left(\frac{x^{1/2}}{y^2}\right) \)

Solve for \( x \) in each of the following. Only turn in problems 5, 6, and 7.

4. \( \log_3(2x - 4) = 2 \)

5. \( 16 \cdot 2^x = 4^{13} \)

6. \( \log_2(x^2 - 2x + 3) = 2 \)

7. \( b^{-7x} = 5My^3 \)

8. \( 8^{3x-2y} = 4 \), where \( 27^y = 9 \).