Name : _____ ( )
Class : Sec 3 ( )
Date : _____

Do your work on foolscap paper.
Show your working clearly.

1. Solve the equation $e^x(2e^x - 3) = 5$.

2. Given that $x = \lg a$ is a solution of the equation $10^{2x+1} - 7(10^x) = 26$, find the value of a.

3. If $\lg x^2 y = a$ and $\lg \dfrac{x}{y} = b$, express $\lg \dfrac{y}{x^2}$ in terms of a and b.

4. Given that $\log_a N = \dfrac{1}{2}(\log_a 24 - \log_a 0.375 + 6\log_a 3)$, find the value of N.

   Find also the value of $\log_a N$ when $a = \dfrac{2}{3}$.

5. Solve the equation $\dfrac{2}{3}\log_4 x + \log_8 (7 - 3x) = \dfrac{1}{3}$.

6. Solve the equation $(\log_3 27)(\log_{27} \dfrac{x}{9}) = \log_{27} x$.

7. Solve the equation $\log_3(x + 5) - \log_{\sqrt{3}}(x - 1) = \log_3 2$.

Answers:
1. $x = 0.916$
2. $a = 2$
3. $\lg \dfrac{y}{x^2} = \dfrac{-a - 4b}{3}$
4. $N = 216$, $\log_a N = -13.3$
5. $\dfrac{1}{3}$ or 2
6. $x = 27$
7. $x = 3$