

## Logarithms and Indices – (REVISION)

1. Given that  $\log_2 x - 3\log_2 y = 3 - 2\log_2 x$ , express **y** in terms of **x**.
2. Solve the equation  $3^x \times 27^x = 9^{4x-3}$
3. Solve the equation  $\log_2 x + 5\log_x 2 - 6 = 0$
4. Solve the equation  $0.25^{2x} = 6^{2x+3}$ . Give your answer correct to **3 significant figures**.
5. Given that  $\log_a 3 = m$  and  $\log_a 2 = n$ , express  $\log_2 36$  in terms of  $m$  and  $n$ .
6. Given that  $\log_2 T - \log_4 V = 3$ , express **T** in terms of **V** SPM 2003 P1
7. Solve the equation  $4^{2x-1} = 7^x$  SPM 2003 P1
8. Solve the equation  $32^{4x} = 4^{8x+6}$  SPM 2004 P1
9. Given that  $\log_5 2 = m$  and  $\log_5 7 = p$ , express  $\log_5 4.9$  in terms of  $m$  and  $p$ . SPM 2004 P1
10. Solve the equation  $2^{x+4} - 2^{x+3} = 1$  SPM 2005 P1
11. Solve the equation  $\log_3 4x - \log_3 (2x-1) = 1$  SPM 2005 P1
12. Given that  $\log_m 2 = p$  and  $\log_m 3 = r$ , express  $\log_m \left( \frac{27m}{4} \right)$  in terms of  $p$  and  $r$ . SPM 2005 P1
13. Solve the equation  $8^{2x-3} = \frac{1}{\sqrt{4^{x+2}}}$  SPM 2006 P1
14. Given that  $\log_2 xy = 2 + 3\log_2 x - \log_2 y$ , express **y** in terms of **x** SPM 2006 P1
15. Solve the equation  $2 + \log_3 (x-1) = \log_3 x$  SPM 2006 P1
16. Given that  $\log_2 b = x$  and  $\log_2 c = y$ , express  $\log_4 \left( \frac{8b}{c} \right)$ , in terms of  $x$  and  $y$ . SPM 2007 P1
17. Given that  $9(3^{n-1}) = 27^n$ , find the value of  $n$ . SPM 2007 P1
18. Solve the equation  $16^{2x-3} = 8^{4x}$  SPM 2008 P1
19. Given that  $\log_4 x = \log_2 3$ , find the value of  $x$ . SPM 2008 P1
20. Given  $3^{n-3} \times 27^n = 243$ , find the value of  $n$ . SPM 2009 P1
21. Given that  $\log_8 p - \log_2 q = 0$ , express  $p$  in terms of  $q$  SPM 2009 P1
22. Solve the equation:  $3^{x+2} - 3^x = \frac{8}{9}$  SPM 2010 P1
23. Given  $\log_2 3 = a$  and  $\log_2 5 = b$ , express  $\log_8 45$  in terms of  $a$  and  $b$  SPM 2010 P1