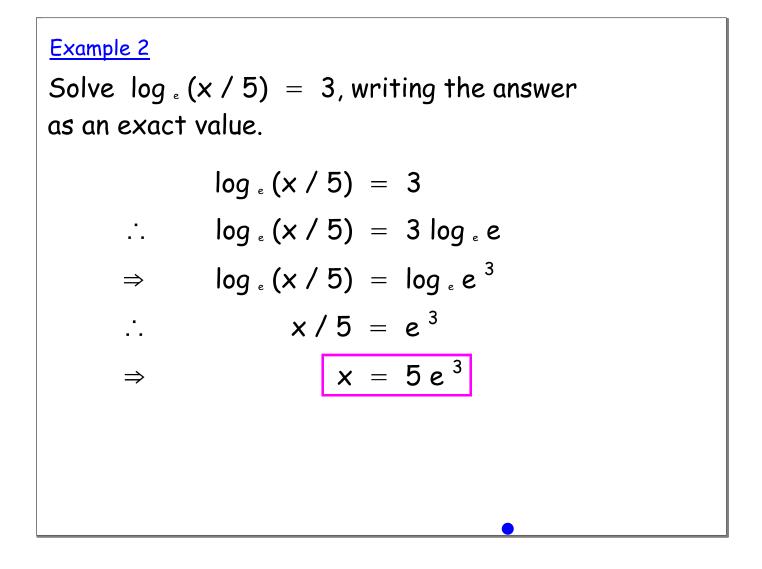
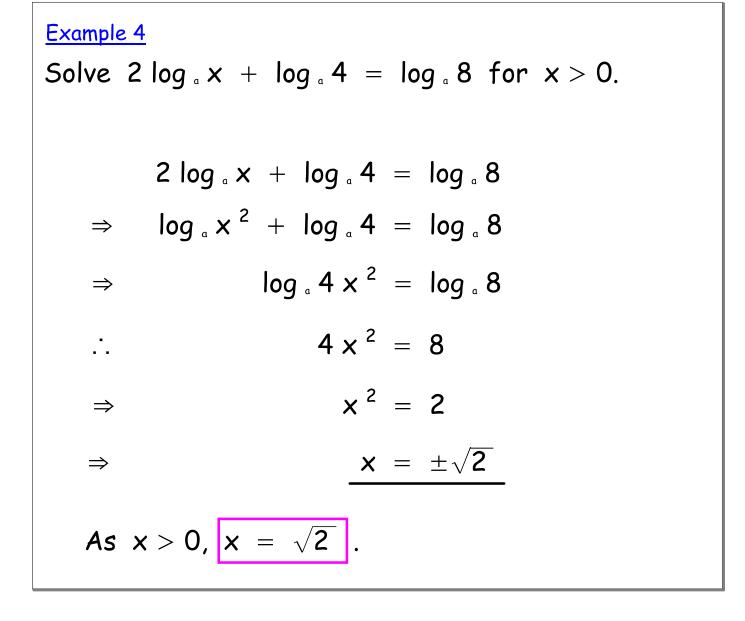
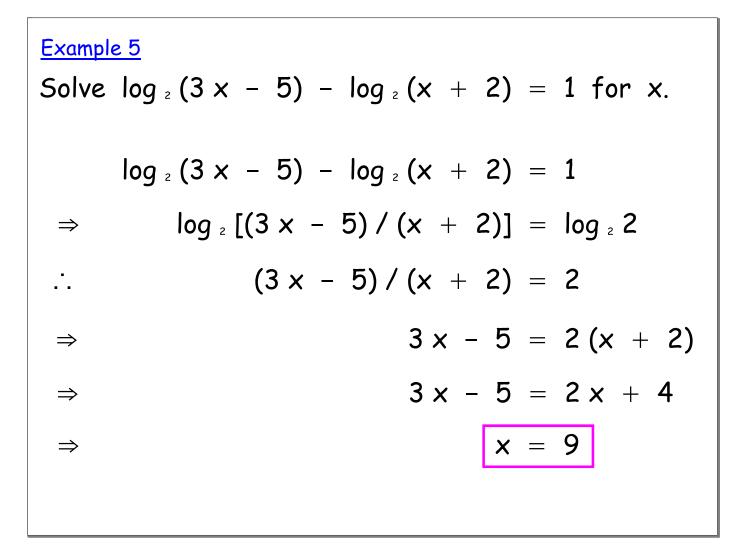


Example 1 Solve $\log_2 x = 5$ for x. Method 1 $\log_2 x = 5$ \therefore 2⁵ = x x = 32 \Rightarrow Method 2 $\log_2 x = 5$ $\therefore \log_{2} x = 5 \log_{2} 2$ $\Rightarrow \log_2 x = \log_2 2^5$ \therefore x = 2⁵ x = 32 \Rightarrow



Example 3 Solve $9^{\times} = 4$ for x (to 3 d.p.). $9^{\times} = 4$ $\therefore \quad \log_{e} 9^{\times} = \log_{e} 4$ $\Rightarrow \quad x (\log_{e} 9) = \log_{e} 4$ $\Rightarrow \qquad x = (\log_{e} 4) / (\log_{e} 9)$ $\Rightarrow \qquad x = 0.631$ (Try it with base 10 - should get same answer)





Example 6
Solve
$$\log_{a} (2x + 1) + \log_{a} (3x - 10) = \log_{a} (11x)$$

for $x > 0$.
 $\log_{a} (2x + 1) + \log_{a} (3x - 10) = \log_{a} (11x)$
 $\Rightarrow \qquad \log_{a} [(2x + 1) (3x - 10)] = \log_{a} (11x)$
 $\therefore \qquad (2x + 1) (3x - 10) = 11x$
 $\Rightarrow \qquad 6x^{2} - 17x - 10 = 11x$
 $\Rightarrow \qquad 6x^{2} - 28x - 10 = 0$
 $\Rightarrow \qquad 3x^{2} - 14x - 5 = 0$
 $\Rightarrow \qquad (3x + 1) (x - 5) = 0$
 $\therefore \qquad x = -1/3, x = 5$
As $x > 0, x = 5$.

CfE Higher Maths pg. 12 Ex. 1E All Q pg. 13 - 14 Ex. 1F All Q (except 2 g) pg. 15 Ex. 1G All Q (except 2 d)

