a) $\log_{10} 2^x = \log_{10}(8)$

$x \cdot \log_{10} 2 = \log_{10}(8) \Rightarrow x = 3$

b) $\log_{10}(3^x) = \log_{10} 27$

$x \cdot \log_{10}(3) = \log_{10} 27$

$x = 3$

c) $\log_{10}(4^x) = \log_{10}(10)$

$x \cdot \log_{10}(4) = \log_{10}(10)$

$x = 1.66$

d) $5^x = 25$

$5^x = 5^2$

$x = 2$

e) $6^{2x} = 36$

$6^{2x} = 6^2$

$x = 1$

f) $2^{x+1} = 16$

$2^{x+1} = 2^4$

$x = 3$

g) $3^{x+2} = 81$

$3^{x+2} = 3^4$

$x = 2$

h) $5^{2x-1} = 125$

$5^{2x-1} = 5^3$

$x = 2.5$

i) $\log_{10}(7^{2x+1}) = \log_{10}(343)$

$(2x+1) \cdot \log_{10}(7) = \log_{10}(343)$

$2x+1 = 3$

$x = 1$

j) $\log_{10}(4^{2x+3}) = \log_{10}(256)$

$2x+3 \cdot \log_{10}(4) = \log_{10}(256)$

$2x+3 = 4$

$x = 0.5$