Quiz 6 Solutions

1a.) $4\left(10^{2\log(x)+1}\right) = 3$

$10^{2\log(x)+1} = \frac{3}{4}$

$10^{2\log(x)} \cdot 10 = \frac{3}{4}$

$10^{2\log(x)} = \frac{3}{40}$

$10^{\log(x^2)} = \frac{3}{40}$

$x^2 = \frac{3}{40}$

$x = \sqrt{\frac{3}{40}} \approx .2738$ (This the same value as the exam solution)

* Review exponent algebra *

b.) $e^{kx} = 2e^{x+2}$

$\ln(e^{kx}) = \ln(2e^{x+2})$

$kx\ln(e) = \ln(2) + \ln(e^{x+2})$

$kx = \ln(2) + (x+2)\ln(e)$

$kx - x = \ln(2) + 2$

$x(k-1) = \ln(2) + 2$

$x = \frac{\ln(2)+2}{k-1}$

* This where many of you messed up *

* $\ln(e) = \log_e(e) = 1$ *

* Factored out x *

c.) $\log(100x) = 2 + 2\log(x^2)$

$\log(100) + \log(x) = 2 + 2\log(x^2)$

$\log(100) + \log(x) = 2 + 4\log(x)$

$\log(100) - 2 = 3\log(x)$

$0 = 3\log(x)$

$0 = \log(x)$

$10^0 = 10^{\log(x)}$

$1 = x$

* $\log(AB) = \log(A) + \log(B)$; $A = 100$, $B = x$ *

* $\log(B^4) = 4\log(B)$ *

* $\log(100) = \log(10^2) = 2$

* exponentiate by base of log (base = 10) *