5.5 Day 2

Note: To solve logarithmic equations, write the equation in exponential form

$$y = \log_b x \longleftrightarrow x = b^y$$

Write the following in exponential form

a) $\log_{10} 5 = x$

b) $\log_3 5x = 2$

c) $\log_6 (x+2) = 50$

$10^x = 5$

$3^2 = 5x$

$6^{50} = x + 2$

Ex1 Solve $\log_{10}(4x - 12) = 3$

① Write in exponential

$$10^3 = 4x - 12$$

$$1000 = 4x - 12$$
$$ +12 \qquad +12$$

② simplify

$$\frac{1012}{4} = \frac{4x}{4}$$

③ Solve

$$\boxed{x = 253}$$

Try a) $\log 7x - 15 = 6$

$10^6 = 7x - 15$

$1000000 = 7x - 15$

$1000015 = 7x$

$\boxed{x = 142859.286}$

b) $\log(3x + 1) = -2$

$10^{-2} = 3x + 1$

$0.01 = 3x + 1$

$-0.99 = 3x$

$\boxed{x = -0.33}$