QUADRATICS, LOGS and DIFFERENTIATION SOLUTIONS

1a) $y = (x-1)(x+6)$

$x-1=0$ or $x+6=0$

$x=1$ $\quad x=-6$

b) $y = x^2+4x+3$

$a=1$, $b=4$, $c=3$

$x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$

$= \frac{-4 \pm \sqrt{4^2-4\times1\times3}}{2\times1}$

$= \frac{-4 \pm \sqrt{16-12}}{2}$

$= \frac{-4 \pm \sqrt{4}}{2}$

$= \frac{-4 \pm 2}{2}$

$= \frac{-4+2}{2}$ or $\frac{-4-2}{2}$

$= \frac{-2}{2}$ or $\frac{-6}{2}$

$= -1$ or -3

c) $y = x^2+3$

$a=1$, $b=0$, $c=3$

$x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$

$= \frac{0 \pm \sqrt{0^2-4\times1\times3}}{2}$

$= \frac{\pm\sqrt{-12}}{2}$

N.P.

$\therefore$ no solutions

d) $y = x^2-10x+25$

$a=1$, $b=-10$, $c=25$

$x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$

$= \frac{-10 \pm \sqrt{-10^2+4\times1\times25}}{2}$

$= \frac{10 \pm \sqrt{100-100}}{2}$

$= \frac{10 \pm 0}{2}$

$= \frac{10}{2}$

$= 5$

e) $y = (x-1)(x-7)$

$x-1=0$ or $x-7=0$

$x=1$ $\quad x=7$

f) $y = x(x+11)$

$x=0$ or $x+11=0$

$x=-11$

g) $y = x^2$

$x^2=0$

$\therefore x = \sqrt{0}$

$= 0$

h) $y = x^2-3x$

$x^2-3x=0$

$x(x-3)=0$

$x=0$ or $x-3=0$

$x=3$

OR $a=1$, $b=-3$, $c=0$

$x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$

$= \frac{-3 \pm \sqrt{-3^2-4\times1\times0}}{2}$

$= \frac{3 \pm \sqrt{9}}{2}$

$= \frac{3 \pm 3}{2}$

$= \frac{3+3}{2}$ or $\frac{3-3}{2}$

$= 3$ or 0