ALGEBRA (Q 1 & 2, PAPER 1)

LESSON NO. 7: FUNCTIONS

2006

2 (c) $f(x) = 1 - b^{2x}$ and $g(x) = b^{1+2x}$, where b is a positive real number. Find, in terms of b, the value of x for which $f(x) = g(x)$.

2005

2 (c) Let $f(x) = \dfrac{x^2 + k^2}{mx}$, where k and m are constants and $m \neq 0$.

(i) Show that $f(km) = f\left(\dfrac{k}{m}\right)$.

(ii) a and b are real numbers such that $a \neq 0$, $b \neq 0$ and $a \neq b$. Show that if $f(a) = f(b)$, then $ab = k^2$.

2004

2 (c) (i) $f(x) = 2x + 1$, for $x \in \mathbf{R}$. Show that there exists a real number k such that for all x, $f(x + f(x)) = kf(x)$.

2002

2 (b) (ii) Let $g(x) = x^n + 3$, for all $x \in \mathbf{R}$, where $n \in \mathbf{N}$. Show that if n is odd then $g(x) + g(-x)$ is constant.

ANSWERS

2006 2 (c) $-\dfrac{\log_{10}(1+b)}{2\log_{10} b}$ or $-\log_b \sqrt{b+1}$

2004 2 (c) (i) $k = 3$