Differentiation & Functions (Q 6, 7 & 8, Paper 1)

Lesson No. 5: Differentiation 3: Quotients

2007

7 (b) (ii) Given that $y = \frac{3x}{2x+3}$, find $\frac{dy}{dx}$.

Write your answer in the form $\frac{k}{(2x+3)^n}$, where $k, n \in \mathbf{N}$.

2006

7 (b) (i) Differentiate $\frac{x^2-1}{x+1}$ with respect to x and write your answer in its simplest form.

2005

7 (b) (ii) Given that $y = \frac{x^2}{x-1}$, find $\frac{dy}{dx}$ when $x = 3$.

2002

7 (b) (ii) Differentiate $\frac{2x}{x-1}$ with respect to x and simplify your answer.

2001

7 (b) (i) Find $\frac{dy}{dx}$ when $y = \frac{x^2}{x-4}$, $x \neq 4$.

2000

7 (b) (i) Find $\frac{dy}{dx}$ when $y = \frac{2x-7}{x-1}$, $x \neq 1$.

1999

7 (b) (ii) Find $\frac{dy}{dx}$ when $y = \frac{x^2}{1-x}$, $x \neq 1$. Show that $\frac{dy}{dx} = 0$ at $x = 0$.

1998

7 (b) (i) Find $\frac{dy}{dx}$ when $y = \frac{2x}{x^2+1}$.

1996

7 (b) (i) Find $\frac{dy}{dx}$ when $y = \frac{2x}{4-x^2}$, for $x \in \mathbf{R}$ and $x \neq \pm 2$.

Show that $\frac{dy}{dx} > 0$.

ANSWERS

2007 7 (b) (ii) $\frac{9}{(2x+3)^2}$

2006 7 (b) (i) 1

2005 7 (b) (ii) $\frac{3}{4}$

2002 7 (b) (ii) $-\frac{2}{(x-1)^2}$

2001 7 (b) (i) $\frac{x^2-8x}{(x-4)^2}$

2000 7 (b) (i) $\frac{5}{(x-1)^2}$

1999 7 (b) (ii) $\frac{2x-x^2}{(1-x)^2}$

1998 **7** (b) (i) $\frac{2-2x^2}{(x^2+1)^2}$

1996 7 (b) (i) $\frac{2x^2+8}{(4-x^2)^2}$