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

Lesson No. 6: Differentiation 4: Chain Rule

2006

7 (b) (ii) Given that $y = (5 - x^2)^3$, find $\frac{dy}{dx}$ when $x = 2$.

2004

7 (b) (ii) Given that $y = (x^2 - 2x - 3)^3$, show that $\frac{dy}{dx} = 0$ when $x = 1$.

2003

7 (b) (i) Differentiate $(3x^3 - 2x^2 + 2)^4$ with respect to x.

2002

6 (b) (i) Find $\frac{dy}{dx}$ where $y = (x - 1)^7$ and evaluate your answer at $x = 2$.

2001

7 (b) (ii) Find the value of $\frac{dy}{dx}$ at $x = 0$ when $y = (x^2 - 7x + 1)^5$.

2000

7 (b) (ii) Find $\frac{dy}{dx}$ when $y = (x^2 + 5x - 1)^3$.

1999

7 (b) (i) Find $\frac{dy}{dx}$ when $y = (3 - 7x)^5$.

1998

7 (b) (ii) Find $\frac{dy}{dx}$ when $y = (4 - 3x^2)^7$ and write down the range of values of x for which $\frac{dy}{dx} > 0$.

1997

7 (b) (ii) Find the value of $\frac{dy}{dx}$ at $x = -1$ when $y = (3x + 1)^4$.

1996

7 (b) (ii) Differentiate $\left(x^5 - \frac{1}{x^2}\right)^7$ with respect to x, $x \neq 0$.

ANSWERS

2006 7 (b) (ii) -12

2004 7 (b) (ii) $(6x-6)(x^2-2x-3)^2$

2003 7 (b) (i) $(36x^2-16x)(3x^3-2x^2+2)^3$

2002 6 (b) (i) $7(x-1)^6$; 7

2001 7 (b) (ii) -35

2000 7 (b) (ii) $(6x+15)(x^2+5x-1)^2$

1999 7 (b) (i) $-35(3-7x)^4$

1998 7 (b) (ii) $-42x(4-3x^2)^6$, $x<0$

1997 7 (b) (ii) -96

1996 7 (b) (ii) $\left(35x^4+\frac{14}{x^3}\right)\left(x^5-\frac{1}{x^2}\right)^6$