

DIFFERENTIATION & FUNCTIONS (Q 6, 7 & 8, PAPER 1)

LESSON NO. 3: DIFFERENTIATION 1: SUMS OF TERMS

2007

- 6 (a) Let $g(x) = x^2 - 6x$, $x \in \mathbf{R}$.
- (i) Write down $g'(x)$, the derivative of $g(x)$.
- (ii) For what value of x is $g'(x) = 0$?
- 7 (a) Differentiate $6x^4 - 3x^2 + 7x$ with respect to x .

2006

- 7 (a) Differentiate $5x^3 - 4x + 7$ with respect to x .

2005

- 7 (a) Differentiate $9 + 3x - 5x^2$ with respect to x .

2004

- 7 (a) Differentiate with respect to x :
- (i) $2x^5$
- (ii) $4(3 - x^2)$.

2003

- 7 (a) Differentiate with respect to x :
- (i) x^3
- (ii) $\frac{x^2 - x^4}{2}$.

2002

- 7 (a) Differentiate $7x^3 - 3x^2 + 9x$ with respect to x .
- (b) (i) Differentiate $x^5 - 17 + \frac{1}{x^5}$ with respect to x .

2001

- 7 (a) Differentiate with respect to x
- (i) $6x^5 + x^2$
 - (ii) $(x-3)(x+3)$
- 8 (a) Let $g(x) = x^4 - 32x$ for $x \in \mathbf{R}$.
- (i) Write down $g'(x)$, the derivative of $g(x)$.
 - (ii) For what value of x is $g'(x) = 0$?

2000

- 7 (a) Differentiate with respect to x
- (i) $4x^2 + 5$
 - (ii) $9x - x^3$.

1999

- 7 (a) Differentiate
- $$2x^3 - 7$$
- with respect to x .

1998

- 7 (a) Differentiate with respect to x
- (i) $x^2 - 3x$
 - (ii) $\frac{1}{x^2}$.

1997

- 7 (a) Differentiate with respect to x
- (i) $-x^2$
 - (ii) $x^4 + x + 1$.
- 8 (a) Let $f(x) = x^2 - 4x$, for $x \in \mathbf{R}$.
- Find $f'(x)$, the derivative of $f(x)$.
- For what value of x is $f'(x) = 0$?

1996

- 8 (a) Find $\frac{ds}{dt}$ when $s = 6t^2 - 3t + 7$.

ANSWERS

2007 6 (a) (i) $g'(x) = 2x - 6$ (ii) $x = 3$

7 (a) $24x^3 - 6x + 7$

2006 7 (a) $15x^2 - 4$

2005 7 (a) $3 - 10x$

2004 7 (a) (i) $10x^4$ (ii) $-8x$

2003 7 (a) (i) $3x^2$ (ii) $x - 2x^3$

2002 7 (a) $21x^2 - 6x + 9$ (b) (i) $5x^4 - \frac{5}{x^6}$

2001 7 (a) (i) $30x^4 + 2x$ (ii) $2x$

8 (a) (i) $4x^3 - 32$ (ii) 2

2000 7 (a) (i) $8x$ (ii) $9 - 3x^2$

1999 7 (a) $6x^2$

1998 7 (a) (i) $2x - 3$ (ii) $-\frac{2}{x^3}$

1997 7 (a) (i) $-2x$ (ii) $4x^3 + 1$

8 (a) $2x - 4, 2$

1996 8 (a) $12t - 3$