

Section Check In – 1.04 Sequences and Series

Questions

1. Find the first 4 terms, in ascending powers of x , of the binomial expansion of $(2+x)^6$, giving each term in its simplest form.
2. Find the coefficient of x^3 in the expansion of $(3-2x)^5$.
3. Find the coefficient of x^2 in the expansion of $(x+2)(2x-3)^4$.
4.
 - (i) Write down the first 3 terms, in ascending powers of x , of the binomial expansion of $(1+ax)^7$, where a is a non-zero constant.
 - (ii) Given that in the expansion of $(1+ax)^7$, the coefficient of x^2 is nine times the coefficient of x , find the value of a .

AS LEVEL and STAGE 1 CONTENT
MATHEMATICS A
Section Check In

Worked solutions

1. $2^6 + \binom{6}{1}2^5x + \binom{6}{2}2^4x^2 + \binom{6}{3}2^3x^3 = 64 + 192x + 240x^2 + 160x^3$

2. $\binom{5}{31}3^2(-2x)^3$ Coefficient of x^3 is $10 \times 9 \times -8 = -720$

3. $(2x-3)^4$
 $= (2x)^4 + 4 \times (2x)^3 \times (-3) + 6 \times (2x)^2 \times (-3)^2 + 4 \times (2x) \times (-3)^3 + (-3)^4$
 $= 16x^4 - 96x^3 + 216x^2 - 324x + 81$

$(x+2)(2x-3)^4 = (x+2)(81 - 324x + 216x^2 - \dots)$
 $= 81x + 162 - 324x^2 - 648x + 432x^2 + \dots$
Coefficient of x^2 is $432 - 324 = 108$

4. (i) $1 + 7ax + 21a^2x^2$
(ii) $21a^2 = 9 \times 7a$, $21a = 63$, $a = 3$

We'd like to know your view on the resources we produce. By clicking on '[Like](#)' or '[Dislike](#)' you can help us to ensure that our resources work for you. When the email template pops up please add additional comments if you wish and then just click 'Send'. Thank you.

Whether you already offer OCR qualifications, are new to OCR, or are considering switching from your current provider/awarding organisation, you can request more information by completing the Expression of Interest form which can be found here:

www.ocr.org.uk/expression-of-interest

Looking for a resource? There is now a quick and easy search tool to help find free resources for your qualification:

www.ocr.org.uk/i-want-to/find-resources/

OCR Resources: *the small print*

OCR's resources are provided to support the delivery of OCR qualifications, but in no way constitute an endorsed teaching method that is required by the Board, and the decision to use them lies with the individual teacher. Whilst every effort is made to ensure the accuracy of the content, OCR cannot be held responsible for any errors or omissions within these resources.

© OCR 2018 - This resource may be freely copied and distributed, as long as the OCR logo and this message remain intact and OCR is acknowledged as the originator of this work.

OCR acknowledges the use of the following content: n/a

Please get in touch if you want to discuss the accessibility of resources we offer to support delivery of our qualifications: resources.feedback@ocr.org.uk