

**M1.**

(a)  $(8^1 =) 8$  or  $(8^0 =) 1$

**M1**

9

*SC1*  $9^1$ **A1****Additional Guidance**

$8^1 + 1$  with answer  $9^1$

**M1A0**

$8^1 + 0$  with answer  $8^1$

**M0A0**

8 on answer line without working

**M0A0**

$8^1 + 8^0$  with answer 8

**M0A0**

$8 \times 1 = 8$  and  $8 \times 0 = 0$  with answer 8

**M0A0**

(b)  $6^8$

**B1**

(c)  $15x^7y^5$

*B1 two terms correct***B2****Additional Guidance**

$8x^7y^5$

**B1**

$15x^6y^5$

**B1**

$15x^7 \times y^5$

**B1**

$8x^7 \times y^5$  or  $15x^7 \times y^6$

**B1**

$15x^{12}y^6$

$15x^7 + y^5$

B0

$8x^7 + y^5$

B0

B0

[5]

**M2.**

(a)  $2x^2 - 6x + x - 3$

*Must be 4 terms**Allow one error**May be in a grid*

M1

$2x^2 - 5x - 3$

*Do not ignore fw*

A1

**Additional Guidance**

$2x^2 - 5x + 3$

M1A0

$2x^2 - 5x + - 3$

M1A0

$2x^2 - 4x - 3$

M0A0

For method mark the four terms may be e.g. in a grid with correct negative signs

(b)  $(y - 4)(y + 6)$

*B1 for  $(y + a)(y + b)$  such that* *$ab = -24$  or  $a + b = 2$* *or B1 for* *$y(y + 6) - 4(y + 6)$* *or  $y(y - 4) + 6(y - 4)$* 

B2

**Additional Guidance**

$(y + 4)(y - 6)$

B1

$(y - 12)(y + 2)$

B1

$(y + 13)(y - 11)$

B1

$y(y + 6)$

B0

Condone use of  $x$  or another letter

(c)  $32x^5 y^{15}$

*B1 for two terms correct in a product*

B2

**Additional Guidance**

Penalise multiplication signs for B2

+ sign(s) in answer scores B0

Mark final answer

$32 \times x^5 \times y^{15}$

B1

$32 \times 5x^5 \times y^{15}$

B1

$32x^5 y^8$

B1

$32xy^{15}$

B1

$32 + x^5 + y^{15}$

B0

[6]

M3.(a)  $3 \times 3 = 9$  and  $\sqrt{3} \times \sqrt{3} = 3$

or  $3^{\frac{1}{2}} \times 3^{\frac{1}{2}} = 3$

 *$\sqrt{3} \times \sqrt{3}$  is essential seen or implied**Accept  $(3^{1.5})^2 = 33 = 27$  oe*

B1

(b)  $(3\sqrt{3})^2 - (3\sqrt{2})^2 (= 27 - 18)$

or  $(3\sqrt{2})^2 + AD^2 = (3\sqrt{3})^2$

*Invisible brackets must be recovered for M1*

**M1**

$\sqrt{9}$  or 3

**A1**

$3\sqrt{2} + \sqrt{2} (= 4\sqrt{2})$

*Dep on M1, not on A1 as well*

**M1Dep**

$0.5 \times \text{their base} \times \text{their } 3$

**M1Dep**

$6\sqrt{2}$

**A1**

### Alternative Method 1

$(3\sqrt{3})^2 - (3\sqrt{2})^2 (= 27 - 18)$

*Invisible brackets must be recovered for M1*

**M1**

$\sqrt{9}$  or 3

**A1**

Area  $ABD = 0.5 \times \text{their } 3 \times 3\sqrt{2}$  **and** area  $ADC = 0.5 \times \text{their } 3 \times \sqrt{2}$

*Dep on M1, not on A1 as well*

**M1Dep**

Area  $ABD = 0.5 \times \text{their } 3 \times 3\sqrt{2}$  **+** area  $ADC = 0.5 \times \text{their } 3 \times \sqrt{2}$

*Sum of two correct areas for their AD*

**M1Dep**

$6\sqrt{2}$

A1

**Alternative Method 2**

$(3\sqrt{3})^2 - (3\sqrt{2})^2 (= 27 - 18)$

*Invisible brackets must be recovered for M1*

M1

$\sqrt{9}$  or 3

A1

$3\sqrt{2} + \sqrt{2} (= 4\sqrt{2})$

*Dep on M1, not on A1 as well*

M1Dep

$\text{Sin } ABD = \text{their } 3 \div 3\sqrt{3} \text{ and Area} = 0.5 \times 3\sqrt{3} \times \text{Their } 4\sqrt{2} \times \text{their } \frac{1}{\sqrt{3}}$

M1Dep

$6\sqrt{2}$

A1

**[6]****M4.**

(a)  $\frac{a^9(x)b^{10}}{a^{11}(x)b^6}$  or  $a^{9-11}(x)b^{10-6}$

M1

$a^{-2}(x)b^4$  or  $\frac{b^4}{a^2}$   
A1  $a^{-2}$  or  $b^4$  (M1 is implied)

$$\text{or } \left(\frac{b^2}{a}\right)^2 \text{ or } (a^{-1}(x)b^2)^2$$

$$\text{SC1 } a^2(x)b^{-4}(xc)$$

A2

(b)  $q^{-3}(x)r^{-2}$  or  $\frac{1}{q^3(x)r^2}$

B1  $q^{-3}$  or  $r^{-2}$  or  $(q^6(x)r^4)^{-\frac{1}{2}}$  or

$(q^{-6}(x)r^{-4})^{\frac{1}{2}}$  or  $\frac{1}{\sqrt{q^6(x)r^4}}$  or

$\sqrt{\frac{1}{q^6(x)r^4}}$  or  $(q^3(x)r^2)^{-1}$

or  $p^{-1} = q^3(x)r^2$

or  $\frac{1}{p} = q^3(x)r^2$

or  $p^2 = q^{-6}(x)r^{-4}$

or  $p^2 = \frac{1}{q^6(x)r^4}$

B2

[5]

M5.

$$8c^3d^{12}$$

B1 For two out of three components correct

B2

[2]

M6. (a)  $y^{11}$

B1

(b)  $w^8$

B1

(c)  $y - 2 = 3x$  or  $\frac{y}{3} = x + \frac{2}{3}$  or  $-3x = 2 - y$

M1

$$\frac{y-2}{3} = x \quad \text{or} \quad x = \frac{2-y}{-3}$$

oe

SC1 for  $x = \frac{2-y}{3}$  or  $x = \frac{y+2}{3}$

A1

[4]