M1.
$3x - (x - 5)$

Condone omission of brackets

M1

$2x + 5 = 17$

M1

6

SC2 11

A1

Alternative 1
$2^{3x} = 2^{17} \times 2^{x-5}$

M1

$3x = 12 + x$

M1

6

SC2 11

A1

Alternative 2
Substitutes a value for x and evaluates correctly as a power of 2.

M1

Substitutes a different value for x and evaluates correctly as a power of 2 which is closer to 17.

M1

6

SC2 11

A1

[3]

M2.

$x^{-\frac{2}{3}}$ or $a = -\frac{2}{3}$

B2 $(x^{-\frac{1}{3}})^2$ or $(x^2)^{-\frac{1}{3}}$ or $(x^{\frac{2}{3}})^{-1}$ or

$(x^{-2})^{\frac{1}{3}}$ or $(x^{\frac{1}{3}})^{-2}$ or $\dfrac{1}{x^{\frac{2}{3}}}$ or $-\dfrac{2}{3}$

B1 $(\sqrt[3]{x})^2$ or $(\sqrt[3]{x^2})^{-1}$ or $(\dfrac{1}{x^2})^{\frac{1}{3}}$

or $\dfrac{1}{(x^2)^{\frac{1}{3}}}$ or $(\dfrac{1}{\sqrt[3]{x}})^2$ *or base x with any negative index.*

B3

[3]

M3. Correct evaluation of a relevant power of 2 or 16

eg $16^{\frac{1}{2}} = (\pm) 4$ or $16^2 = 256$ or $2^4 = 16$ or

or $4\,c = d$

$16^{\frac{1}{4}} = (\pm)2$ or $16^1 = 16$ or $16^0 = 1$

M1

One correct pair of answers

A correct answer is such that d = 4c

A1

A second correct pair of answers

eg c = 0, d = 0

c = 1, d = 4 or c = – 1, d = – 4

$c = 2, d = 8$ or $c = \dfrac{1}{8}$, $d = \dfrac{1}{2}$ *etc …*

A1

[3]

M4. Sequence continued correctly

horizontally for at least two terms

128 and 256 (and 512)

M1

A calculation that leads to *x* if evaluated correctly

or extending the sequence to at least row 3

224 or 412

16 × 324

644

M1dep

16 777 216

A1

their value in standard form

or their value to 3 s.f.

1.67(77216) × 107

or 1.6 × 107

or 1.7 × 107

or 16 800 000

For standard form allow rounding or truncation

B1ft

1.68 × 107

B1ft

[5]

M5. Correct cubing of any integer [25, 30]

Note: 253 = 15 625

263 = 17 576

273 = 19 683

283 = 21 952

293 = 24 389

303 = 27 000

M1

26 or 27

SC1 for 18 or 183 (= 5832)

A1

[2]