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QUESTION WORKBOOK

# Parametric equations

Coordinate geometry · Year 12–13

7 questions · 23 marks

NAVY SCREEN EDITION

**SECTION A** · Warm-up

- A1** A curve has parametric equations  $x = t^2 + 1$ ,  $y = 2t - 1$ . Find the coordinates of the point where  $t = 2$ . [2]

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- A2** Find the Cartesian equation of the curve  $x = t - 3$ ,  $y = t^2$ . [2]

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**SECTION B** · Standard

- B1** A curve has parametric equations  $x = 2t$ ,  $y = 12/t$  for  $t \neq 0$ . Find its Cartesian equation, and name the type of curve. [3]

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- B2** The curve  $C$  has parametric equations  $x = 5 \cos t$ ,  $y = 5 \sin t$  for  $0 \leq t \leq \pi$ . Find the Cartesian equation of  $C$ , and state precisely which part of that Cartesian curve  $C$  is. [4]

**B3** Find the Cartesian equation of the curve  $x = 4 \cos t$ ,  $y = 3 \sin t$ . [3]

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### SECTION C · Stretch

**C1** The curve C has parametric equations  $x = t^2$ ,  $y = t^6$ . Find its Cartesian equation, and explain why C is only part of the curve that equation describes. [3]

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**C2** A ball's flight is modelled by  $x = 20t$ ,  $y = 15t - 5t^2$ , with  $x$  and  $y$  in metres and  $t$  in seconds from launch. Find when the ball lands, how far away it lands, and the greatest height it reaches. [6]