

AQA, Edexcel, OCR, MEI

A Level

A Level Mathematics

C4 Parametric Equations
(Answers)

Name:

M M E

Mathsmadeeasy.co.uk

Total Marks: /52

C4 - Parametric Equations (Answers)
MEI, OCR, AQA, Edexcel

1. Write the following parametric equations in cartesian form:

(a) $y = 2x$. [2]

(b) $y = x$. [1]

(c) $y = 4x + 6$. [2]

(d) $y = x^2$. [2]

(e) $x^2 + y^2 = 4$. [2]

(f) $y = \sin(x + 1)$. [2]

(g) $y = e^{e^x}$. [2]

(h) $y = e^{4x}$. [3]

(i) $y = \frac{\sqrt{x}}{4} (\ln x)^2$. [3]

2. Sketch the curves parameterised by the following equations:

(a) [2]

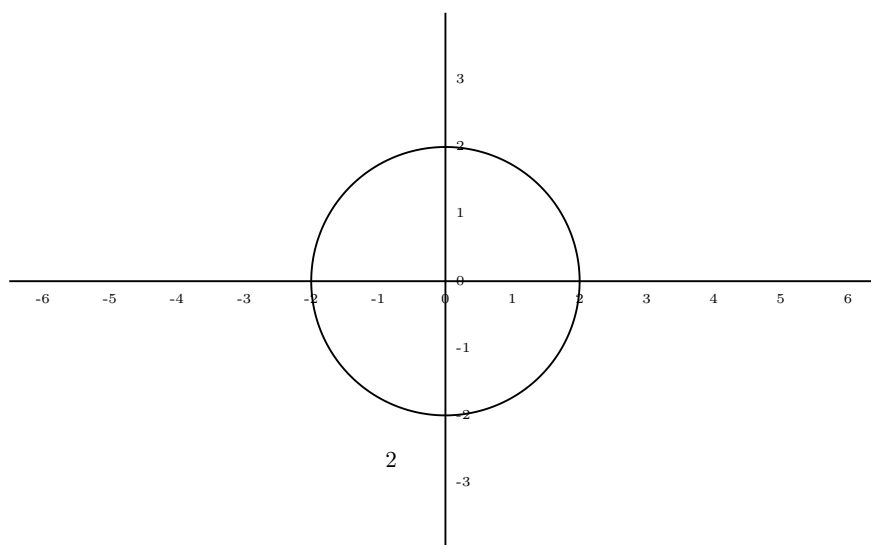


Figure 1: $x = 2 \cos t$, $y = 2 \sin t$.

(b)

[2]

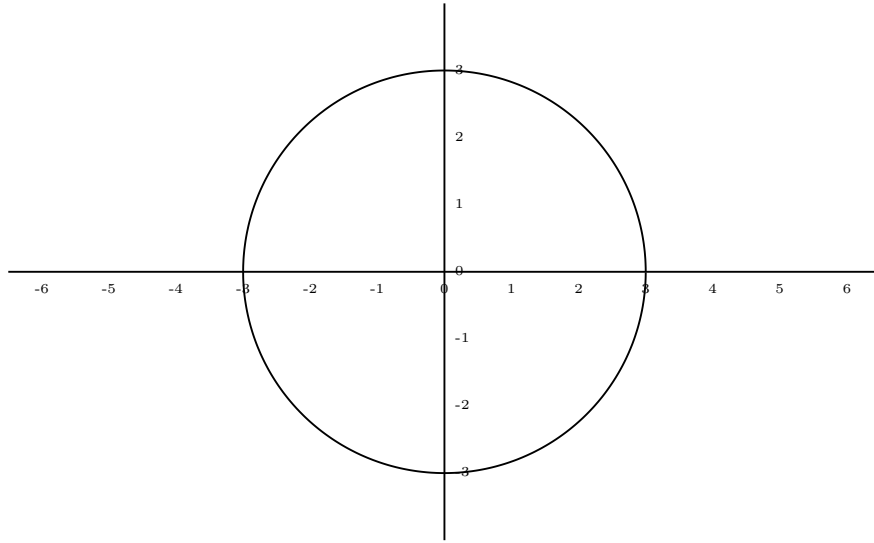


Figure 2: $x = 3 \cos t$, $y = 3 \sin t$.

(c)

[3]

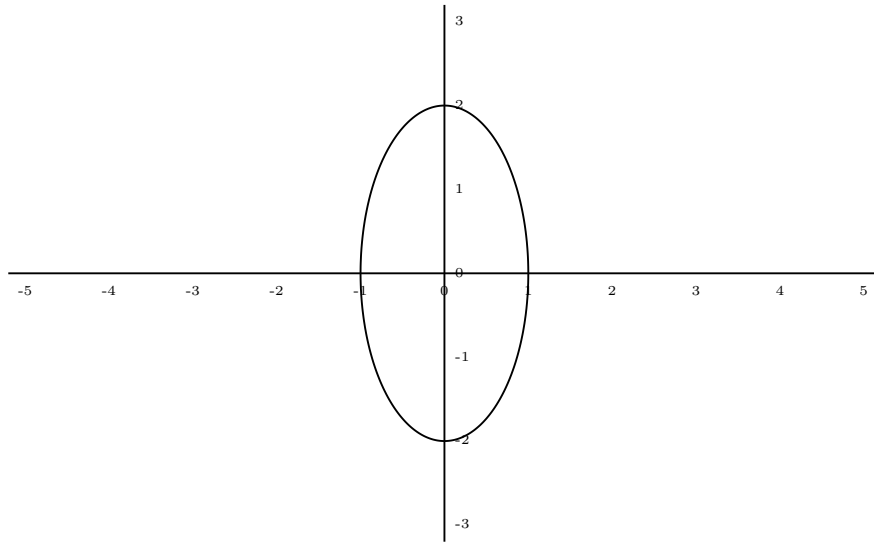


Figure 3: $x = \cos t$, $y = 2 \sin t$.

(d)

[2]

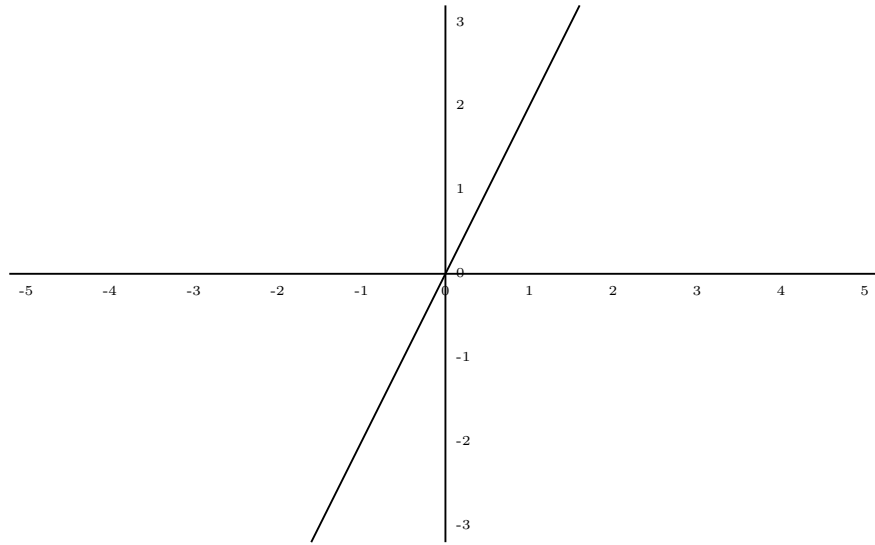


Figure 4: $x = t$, $y = 2t$.

(e)

[3]

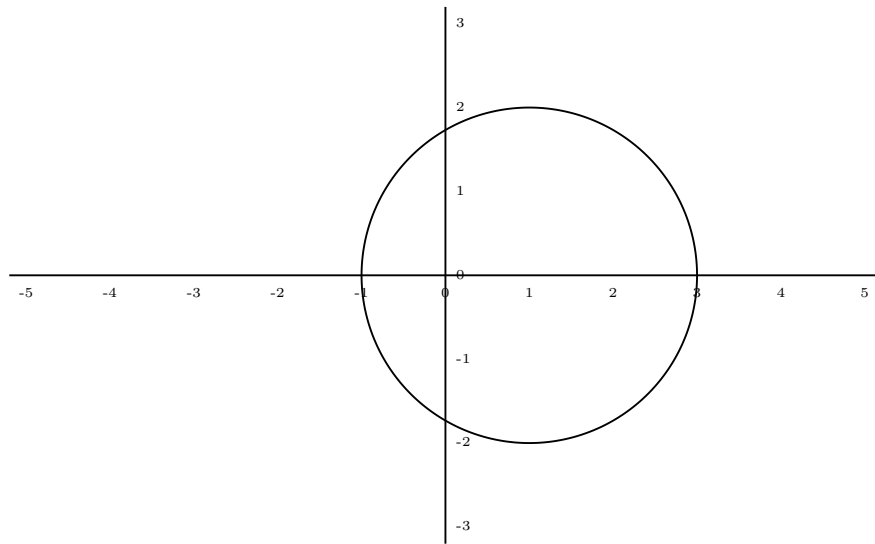


Figure 5: $x = 2 \cos t + 1$, $y = 2 \sin t$.

Turn over

3. Find $\frac{dy}{dx}$ for each of the following sets of parametric equations. Leave your answers in terms of t .
Hint: $\frac{dy}{dx} = \frac{dy}{dt} \times \frac{dt}{dx}$:

(a) $\frac{dy}{dx} = 1.$ [2]

(b) $\frac{dy}{dx} = \cos^3 t.$ [2]

(c) $\frac{dy}{dx} = \frac{3}{5}t^2.$ [3]

(d) $\frac{dy}{dx} = \frac{1}{te^t}.$ [2]

(e) $\frac{dy}{dx} = \tan t + t.$ [3]

(f) $\frac{dy}{dx} = \frac{1}{t}.$ [3]

4. Consider the set of parametric equations:

$$\begin{aligned}x &= e^t, \\y &= e^{2t} - 1.\end{aligned}$$

(a) $\frac{dy}{dx} = 2e^t.$ [2]

(b) $\frac{dy}{dx} = 2x.$ [2]

(c) $y = x^2 - 1.$ [2]