…when you have trig identities

When we have trig functions we have to use identities to find the Cartesian equation. Generally we use $\sin^2 t + \cos^2 t \equiv 1$ or $1 + \tan^2 t \equiv \sec^2 t$

[Textbook] A curve has the parametric sequences $x = \sin t + 2$, $y = \cos t - 3$, $t \in \mathbb{R}$.

a) Find a Cartesian equation for the curve.

b) Hence sketch the curve.

[Textbook] A curve is defined by the parametric equations

$$x = \sin t\,, \qquad y = \sin 2t\,, \qquad -\frac{\pi}{2} \leq t \leq \frac{\pi}{2}$$

a) Find a Cartesian equation of the curve in the form $y = f(x)$, $-k \leq x \leq k$, stating the value of the constant k.

b) Write down the range of $f(x)$.

Test Your Understanding

C4 June 2013

which double angle formula would be best here?

4. A curve C has parametric equations

$$x = 2\sin t, \qquad y = 1 - \cos 2t, \qquad -\frac{\pi}{2} \leq t \leq \frac{\pi}{2}$$

(*b*) Find a cartesian equation for C in the form

$$y = f(x), \qquad -k \leq x \leq k,$$

stating the value of the constant k.

[Textbook] A curve C has parametric equations

$$x = \cot t + 2, \qquad y = cosec^2 t - 2, \qquad 0 < t < \pi$$

a) Find the equation of the curve in the form $y = f(x)$ and state the domain of x for which the curve is defined.

b) Hence, sketch the curve.

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