Homework: Intro to Parametrics

1 In each of the following

(a) find the co-ordinates of the points corresponding to values of t from -2 to $+2$ at half-unit intervals, or values of θ from $0°$ to $360°$ in $30°$ intervals

(b) sketch the curve

(c) find the cartesian equation of the curve.

(i) $x = 2t$, $y = t^2$

(ii) $x = \cos 2\theta$, $y = \sin^2\theta$

(iii) $x = t^2$, $y = t^3$

(iv) $x = \sin^2\theta$, $y = 1 + 2\sin\theta$

(v) $x = 2\operatorname{cosec}\theta$, $y = 2\cot\theta$

(vi) $x = 2\sin^2\theta$, $y = 3\cos\theta$

(vii) $x = \tan\theta$, $y = \tan 2\theta$

(viii) $x = t^2$, $y = t^2 - t$

(ix) $x = \dfrac{t}{1+t}$, $y = \dfrac{t}{1-t}$

Do first and third columns

Use Desmos to draw graphs and make sketches of them or print them out

Desmos requires the parametric eqns to be entered as a coordinate pair and the parameter must be t not θ.

Then you will be able to specify the range for t

eg ii) $(\cos(2t), \sin^2(t))$

$0 \le t \le 360$