8B Finding Cartesian Equations with Trig

1. A curve has parametric equations:

$$x = sint + 2, \ y = cost - 3, \ t \in \mathbb{R}$$

a) Show that a Cartesian equation of the curve is given by:

$$(x - 2)^2 + (y + 3)^2 = 1$$

b) Hence, sketch the curve…

2. A curve has parametric equations:

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

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

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

3. A curve has parametric equations:
$$x = \cot(t) + 2, \quad y = cosec^2 t - 2$$
$$0 < t < \pi$$

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