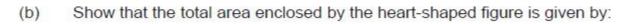
Question 5 (5 marks)

(a) Given that 
$$\frac{7x^2 - 12x + 2}{(x - 2)(x^2 + 2)} = \frac{a}{x - 2} + \frac{bx}{x^2 + 2}$$
 determine the values of  $a$  and  $b$ . (2 marks)

(c)	By using the substitution $x = \sqrt{2} \sin \theta$ , evaluate the total area enclosed by the	
	heart-shaped figure, and hence see why it can be said that ' $\pi$ is at the heart of	
	mathematics'.	(5 marks)



$$Area = 4 \int_{0}^{\sqrt{2}} \sqrt{2 - x^2} dx. \tag{2 marks}$$