NAME:

Quiz 12

Clear your desk of everything except pens, pencils and erasers. **Show all your work.**
If you have a question raise your hand and I will come to you.

1. Consider the Cartesian point $(x, y) = (-3, 3)$.
a). Give a set of polar coordinates (r, θ) for this point, with $r > 0$.

b). Give a set of polar coordinates (r, θ) for this point, with $r < 0$.

2. Consider the polar curves:

$$C_1 : \quad r = 4 \sin \theta;$$
$$C_2 : r = 2\sqrt{3}$$

a). Find the Cartesian equations of each curve.
b). Sketch both of the curves in the Cartesian plane.

c). Set up an integral to compute the area shared by the two curves (do not evaluate integral).