Show all work, including mental steps, in a clearly organized way that speaks for itself. Use proper mathematical notation, identifying expressions by their proper symbols (introducing them if necessary) and using equal signs and arrows when appropriate. \boxed{Final short answers.}

a) For the curve $C_1$ use $x = t$ as a parameter.
Write down $\mathbf{F}(t) = \langle x(t), y(t) \rangle$ and the corresponding interval $a \leq t \leq b$. Express $\int_{C_1} \mathbf{F} \cdot d\mathbf{r}$ as a definite integral in $t$ and then evaluate it. You may use MAPLE.

b) For the curve $C_2$ use the polar angle $\theta = t$ as a parameter.
Write down $\mathbf{F}(t) = \langle x(t), y(t) \rangle$ and the corresponding interval $c \leq t \leq d$. Express $\int_{C_2} \mathbf{F} \cdot d\mathbf{r}$ as a definite integral in $t$ and then evaluate it. You may use MAPLE (or your calculator).

c) Combine the two results to obtain the closed loop $C = C_1 + C_2$ line integral $\int_{C} \mathbf{F} \cdot d\mathbf{r} = \int_{C_1} \mathbf{F} \cdot d\mathbf{r} + \int_{C_2} \mathbf{F} \cdot d\mathbf{r}$.

d) Set up and evaluate a double integral whose value by Green's Thm should agree with part C).
You may use MAPLE to evaluate it. Do they agree?