A. HW problem(s) of your choice.

B. Let C be the circle $(x-2)^2 + (y-3)^2 = 4$ (counterclockwise), and let $\mathbf{F} = \langle 2x + y^2, 2xy + 3x \rangle$. Compute $\int_C \mathbf{F} \cdot d\mathbf{r}$. Hint: you can subtract off a conservative field to make $\mathbf{F}$ simpler.

C. Let $\mathbf{F} = \left\langle \frac{-y}{x^2+y^2}, \frac{x}{x^2+y^2} \right\rangle$. Show that $\mathbf{F} = \nabla(\arctan(y/x))$. Directly compute $\int_C \mathbf{F} \cdot d\mathbf{r}$, where C is the unit circle (counterclockwise). What's going on?

D. Compute $\int_C \mathbf{F} \cdot d\mathbf{r}$, where C is the curve $\mathbf{r}(t) = \langle t, \sin t, \sin t \rangle$ and $\mathbf{F} = \langle x, \sin(\sin y), \cos(\cos z) \rangle$.

E. Compute $\int_C \mathbf{F} \cdot d\mathbf{r}$, where C is the unit circle (counterclockwise) and $\mathbf{F} = \langle -y^3 + \sin(\sin x), x^3 + \sin(\sin y) \rangle$.

F. Compute $\int_C \mathbf{F} \cdot d\mathbf{r}$, where C is parameterized by $\mathbf{r}(t) = \langle \sin t, \cos t, t \rangle$ and $\mathbf{F} = \langle y^2 z \sec^2 x, 2yz \tan x + 2z, y^2 \tan x + 2z \rangle$. Hint: Write $\mathbf{F}$ as the sum of a conservative vector field and a vector field with only one nonzero component.