Cu8. The fundamerbal theoveur of colculng for awy shape
80. Intro

Chs, Integer abianTheorens of Vector Analysis
In chapter 7 we learned varvous integrals curer curves anal surfaces. Section 8.0. hive: A. We first recall the Fun damenta Theorem of Callus $(F I C) \quad S_{a} f^{\prime}(x) \alpha=f(b)-f(a)$ we notice the rale of orientation and restate it as $9 \rightarrow f^{\prime}(x) d x=$ if
B. We guess how FTC will hook like

- fer any shape $S$.
C. We la arm what "derivative" may mean in various cases of FTC. this is explained in Fortundery here details in typed voles?

$$
\because 2 A
$$

cins. Fundamerlal Thoovien

$L$ to $R$

$$
a^{9}>0
$$

at cutemval larbs witer stauder asient)


Geountric view

coupestible arienberious avieupebion of 8 defermines que foa DS
$S_{0}$ der-ivedue of $\psi=\underbrace{}_{i} \psi$
C. The mearing of denivative in FTC Here grauts ty $\psi$ culd be a $\left\{\begin{array}{l}\text { furction fer a } \\ \text { vectar field } F\end{array}\right.$. - for a fundiou $f$ the der valive is the $\nabla=\left\langle\partial_{x}, \partial_{y}, \partial_{z}\right\rangle$

- lion a

$$
\frac{\text { vesen fi\&e }}{\text { ves }}=\left\langle P_{1} Q, R\right\rangle=
$$

Dalivengence:-
$=\nabla \cdot F$ $=\nabla \cdot F=\partial_{x} P+\frac{x+Q_{1} \neq R^{2} z}{\partial y Q+S_{z} R}$

