

MA3408 Week 10

Drew Heard (drew.k.heard@ntnu.no)

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Question 1.

Show that a fibre bundle over a contractible base space is trivial.

Question 2.

If

$$\begin{array}{ccc} E' & \xrightarrow{\tilde{f}} & E \\ \pi' \downarrow & & \downarrow \pi \\ B' & \xrightarrow{f} & B \end{array}$$

is a morphism of principal G -bundles, then $\pi' \cong f^* \pi$ as bundles over B .

Remark: More generally, it should hold whenever the morphism is a fiberwise isomorphism (I think!).

Question 3.

Show that there are exactly two principal $SO(3)$ -bundles over S^2 .