\[3.1_9\]

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**Practice 3D Mathematical Extensions**

Suppose we have a quadrilateral \( P_1 P_2 P_3 P_4 \).

**Step 1:** \( P_1 P_2 P_3 P_4 \) is a quadrilateral.

**Step 2:** \( P_1 P_2 P_3 P_4 \) is a quadrilateral.

**Step 3:** \( P_1 P_2 P_3 P_4 \) is a quadrilateral.

**Step 4:** \( P_1 P_2 P_3 P_4 \) is a quadrilateral.

**Problem Show:** \( 2 \longrightarrow 3 \longrightarrow 4 \longrightarrow 1 \rightarrow 2 \) (V1).

**Problem:** Show that \( S^1 - \{ \} \) is disjoint from \( V(1) \).

**Proof:**

**Base Case:** For \( n = 1 \), \( S^1 - \{ \} \) is disjoint from \( V(1) \).

**Inductive Step:** Assume \( S^1 - \{ \} \) is disjoint from \( V(k) \) for all \( k \leq n \) and \( n \geq 1 \).

**Conclusion:** \( S^1 - \{ \} \) is disjoint from \( V(k+1) \).

Hence, \( S^1 - \{ \} \) is disjoint from \( V(1) \).

**Remark:** We can thus \( V(2) \) for all \( n > m \) by relying only on \( \alpha \) as the base case.

**Problem:** For which \( n \) is \( S^1 - \{ \} \) disjoint from \( V(n) \)?

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**Problem Show:** \( 2 \longrightarrow 3 \longrightarrow 4 \longrightarrow 1 \rightarrow 2 \) (V1).

**Problem:** Show that \( H \) is the interior of the solid angle at \( P_0 \) in the diagram made up of two \( S^1 \) disks. 

**Proof:** Show that the area of the interior of the solid angle at \( P_0 \) is the area of the \( S^1 \) disks.