

15.2, number 37: **Compute** $\int_{-2}^0 \int_v^{-v} 2 dp dv$ **and draw the region in the** pv -**plane over which you have integrated.**

Answer: We drew the region on the next page.

$$\begin{aligned} & \int_{-2}^0 \int_v^{-v} 2 dp dv \\ &= \int_{-2}^0 2p \Big|_v^{-v} dv \\ &= \int_{-2}^0 -2v - 2v dv \\ &= \int_{-2}^0 -4v dv \\ &= -2v^2 \Big|_{-2}^0 \\ &= \boxed{8} \end{aligned}$$

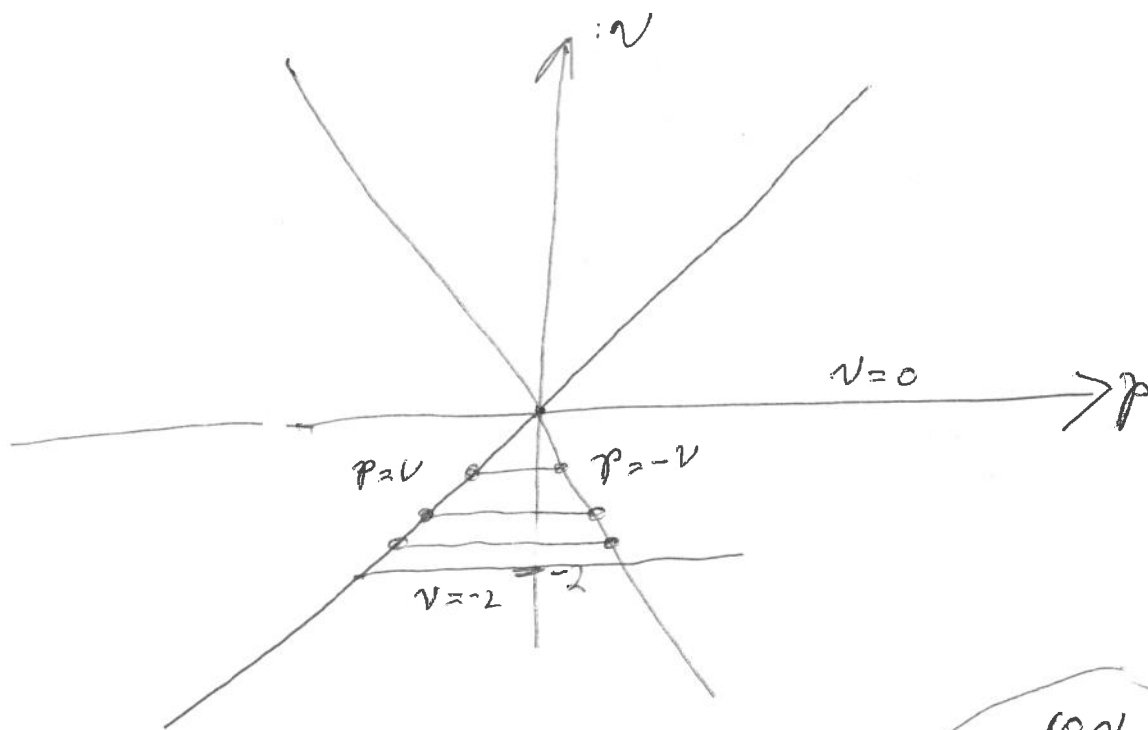
Picture Section 15.2 Number 37

$$\int_{-2}^0 \int_v^{-v} 2 \, dp \, dv$$

The integral is taken over the region described by
 For each fixed v with $-2 \leq v \leq 0$; p goes from

$$p = v \text{ to } p = -v$$

We draw the lines $p = v$, $p = -v$, $v = -2$ and $v = 0$



The integral is taken over

The region is filled with horizontal lines

