Problem T1. 図面に注目 *(13 points)*

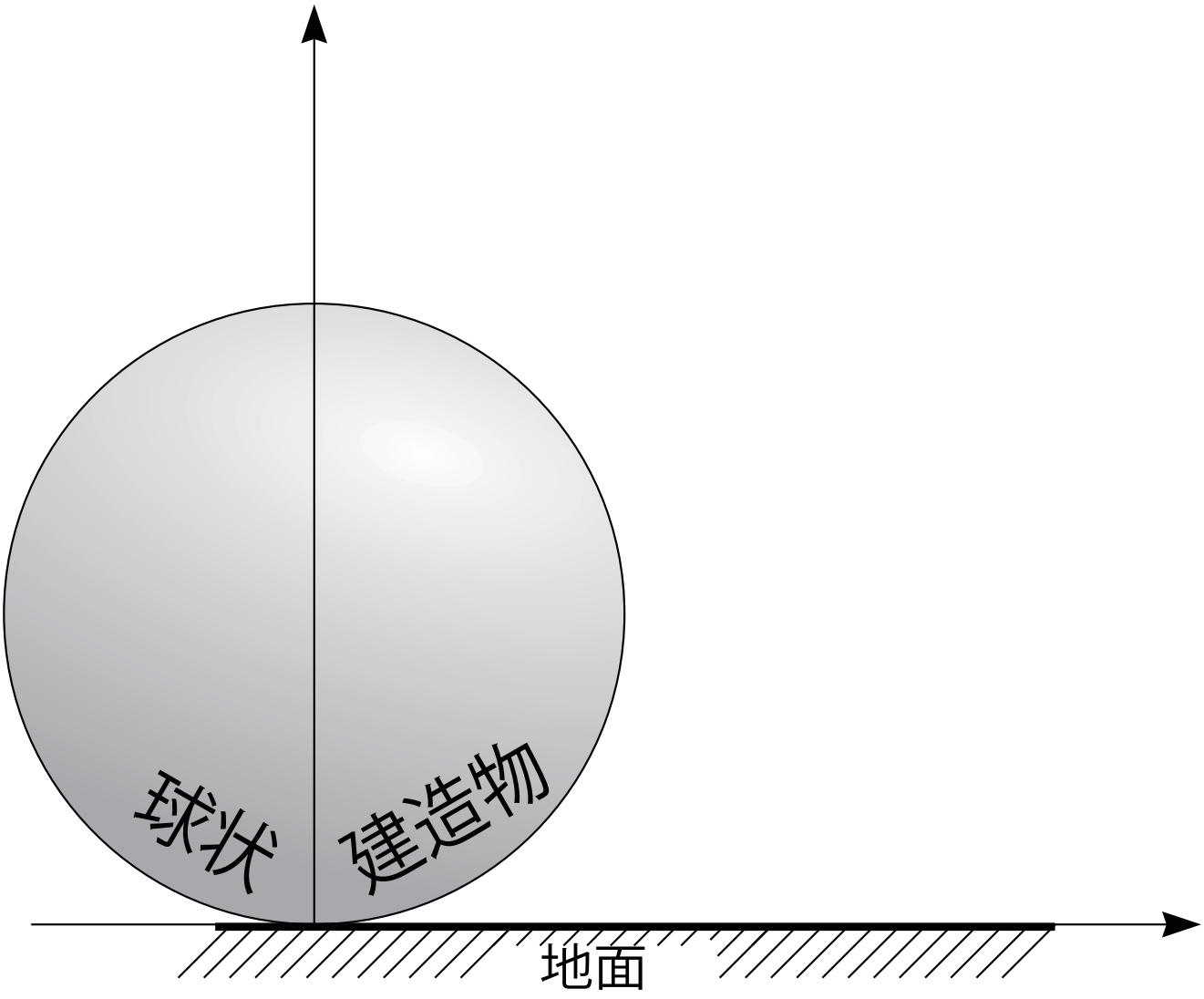
Part A. 弾道 *(4.5 points)*

i. (0.8 pts)

$z_0 =$

$k =$

ii. (1.2 pts) 軌跡の描画



iii. (2.5 pts)

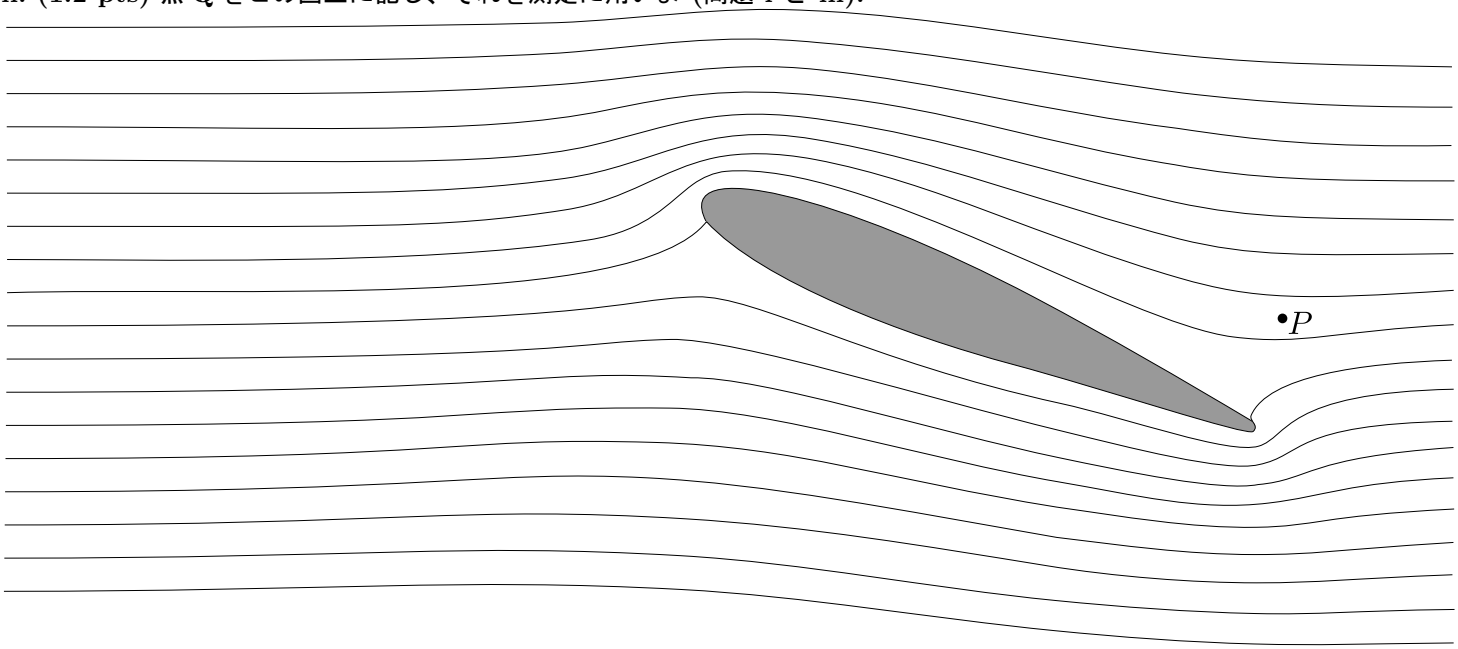
$v_{\min} =$

Part B. 翼の周りの空気の流れ *(4 points)*

i. (0.8 pts)

$v_P =$

ii. (1.2 pts) 点 Q をこの図上に記し、それを測定に用いよ (問題 i と iii).



点 Q を決めた理由
となる式:

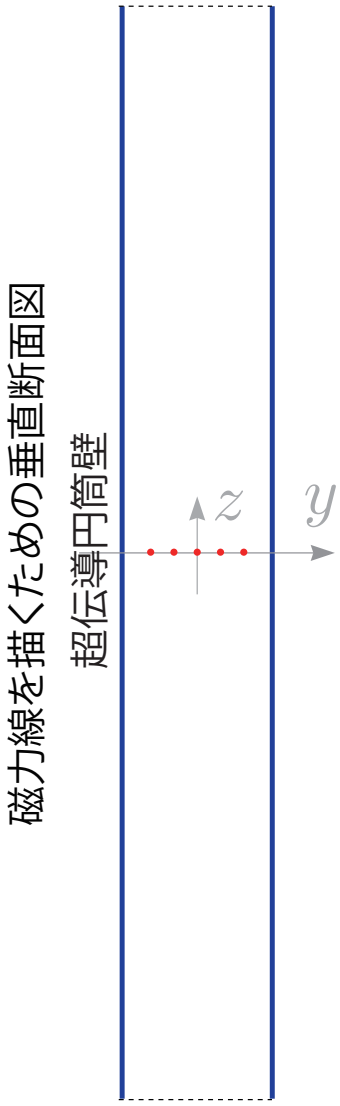
iii. (2.0 pts)

式: $v_{\text{crit}} =$

数値: $v_{\text{crit}} \approx$

Part C. 磁力線ストロー *(4.5 points)*

i. (0.8 pts)
ここに 5 本の
磁力線を描け



ii. (1.2 pts)

$T =$

iii. (2.5 pts)

$F =$

Problem T2. ケルビンの点滴 *(8 points)*

Part A. 1 本のパイプ *(4 points)*

i. (1.2 pts)

$r_{\max} =$

ii. (1.2 pts)

$Q =$

iii. (1.6 pts)

$\varphi_{\max} =$

Part B. 2 本のパイプ *(4 points)*

i. (1.2 pts)

$Q_0 =$

ii. (1.5 pts)

$q(t) =$

iii. (1.3 pts)

$U_{\max} =$

Problem T3. 原始星の誕生 *(9 points)*

i. (0.8 pts)

$n =$

ii. (1 pt)

$t_2 \approx$

iii. (2.5 pts)

$t_{r\to 0} =$

iv. (1.7 pts)

$Q =$

v. (1 pt)

$T(r) =$

vi. (2 pts)

$r_4 \approx$

$T_4 \approx$