

Chapter 1, #2, 3

Pt 1

HW

1.2 height of Mt Everest 8848 m

Assume hydrostatic & isothermal at 260

$$p = p_0 e^{-z/H}, \quad H = \frac{RT}{g} = \frac{287 \text{ J kg}^{-1} \text{ K}^{-1} \cdot 260 \text{ K}}{9.8 \text{ m s}^{-2}} = 7606 \text{ m}$$

$$p = 1013 e^{-8.848/7.606} = 0.312 \cdot 1013$$

$$1 - 0.312 = \boxed{69\%} \text{ is below}$$

1.3 Raise temp by 50 How much does pressure at 5 km change

$$p = p_s e^{-z/H}$$

$$\Delta p = p_s \left(e^{-z/H_1} - e^{-z/H_2} \right)$$
$$= p_s \left(e^{-5/7.606} - e^{-5/7.60} \right)$$

$$H_2 = \frac{RT_2}{g} = \frac{287 \cdot 265}{9.8} = 7.760$$

$$\underline{0.525 - 0.518}$$

$$= 1013 \times () = \boxed{+6.9 \text{ mb}}$$

#3 Chapter 1

-2/4

Chapter 1, #3

$$P = P_0 e$$

$$H = \frac{260 \cdot 287}{9.81} = 7606$$

$$H_2 = \frac{265 \cdot 287}{9.81} = 7753$$

$$\Delta p = P_0 \left(e^{-\frac{z}{H_2}} - e^{-\frac{z}{H}} \right)$$

$$= 1013 \left(\underset{e^{-0.52471}}{\cancel{-0.6449}} - 0.51821 \right)$$

$$= 658 \text{ Pa}$$

$$6.6 \text{ mb}$$