Formula sheet exam TTT4234 Space Technology I, Thursday December 8th, 2011

Useful and not so useful formulas and constants (not all are necessary for solving the problems):

The speed of light = $3 \cdot 10^8$m/s

Gravitational acceleration at sea level = 9.81m/s^2

$\mu = 3.986 \cdot 10^5$ km^3/s^2

Force: $F = m \cdot a$

$F = \Delta p / \Delta t$

$F = GMm/r^2$

$F = mv^2/r$

$G = 6.67 \cdot 10^{-11}$Nm^2/kg^2

$M = 5.98 \cdot 10^{24}$kg

The classic orbital elements: a, e, i, Ω, ω, υ

X in deciBel (dB): $X_{dB} = 10\log_{10}(X_{lin})$

The semi major axis in an ellipsoid = ½ (R_a+R_p)

$e = (R_a-R_p) / (R_a+R_p)$

$\Delta v = v_{eff} \cdot \ln (M_{initial}/M_{final})$

Boltzmann's constant $k = 1.38 \times 10^{-23}$ J/K