Formula sheet exam TTT4234 Space Technology I, December 11th, 2013

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

The speed of light = $3\cdot10^8$ m/s

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

$\mu = 3.986\cdot10^5$ km^3/s^2

Force: $F = m\cdot a$

$F = \Delta p/\Delta t$

$F = GMm/r^2$

$F = mv^2/r$

$F = mr\omega^2$

$G = 6.67\cdot10^{-11}$ Nm^2/kg^2

$M = 5.98\cdot10^{24}$ kg

$R_E = 6370$ km

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

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

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

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

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

The sunlight needs about 8 minutes to travel the distance from the Sun to Earth.