The Equation Sheet

Constants:

Avogadro's Number (N_A)	6.02×10^{23}
Universal Gas Constant (R)	8.314 J/mol K
Planck's constant (h)	6.626×10^{-34} J s
Rydberg Constant	2.18×10^{-18} J
Speed of light (c)	3.00×10^{8} m/s

Conversion Factors:

1A = 1 C/s
1C = 1 J/V mol
1 L. atm = 101.3 J
1 nm = 10^{-9} m
1 atm = 760 torr
= 760 mm Hg

The Equations

$1/[A] = kt + 1/[A]_o$

$\ln[A]_t = -kt + \ln[A]_o$

$K_p = K_c (RT)^{\Delta n}$

$pH = -\log [H_3O^+]$

$[H_3O^+] = 10^{-pH}$

$K_w = K_a \times K_b$

$pK_a + pK_b = pK_w$

$pK_a = -\log K_a$

$pK_b = -\log K_b$

$pK_b = 14 - pK_a$

$pH + pOH = 14$

$pOH = -\log [OH^-]$

$[OH^{-1}] = 10^{-pOH}$

Charge = Current x Time

$E^o_{cell} = E^o_{cathode} - E^o_{anode}$

$E = hc / \lambda$

$c = \lambda v$

$\Delta E = R_H(1/n_i^2 - 1/n_f^2)$

$E = hf$

$t_{1/2} = 0.693/k$
$[A]_t = -kt + [A]_o$

$PV = nRT$

$q = mc\Delta T$ $\quad$ $q = C\Delta T$ $\quad$ $\Delta H^0 = \frac{-Q}{\#\ mol}$

$\Delta H^o_{rxn} = \Sigma \Delta H^o_f$ (products) - $\Sigma \Delta H^o_f$ (reactants)

$\Delta G^o_{rxn} = \Sigma \Delta G^o_f$ (products) - $\Sigma \Delta G^o_f$ ((reactants)

$\Delta S^o_{rxn} = \Sigma S^o_f$ (products) - ΣS^o_f (reactants)

$\Delta G^0 = \Delta H^0 - T\Delta S^0$