Useful formulas

Quantum Chemistry	Electrochemistry
$E = h\nu = hc/\lambda$	$\Delta G° = -nFE°$
$\lambda = h/m\nu$	*Moles of* $e^- = It/F$
$E = -Z^2 E_R(1/n^2)$	$E = E° - (RT/nF) \times \ln Q$
$\Delta x \cdot \Delta(m\nu) \geq h/4\pi$	$E° = (RT/nF) \times \ln K$
$q = 4\pi r^2 \times 5.67 \times 10^{-8} \times T^4$	$E = E° - \dfrac{0.0592}{n}\log Q$ (at 25 °C)
$T\lambda = 2.898 \times 10^6$ K nm	

Acids and Bases	Gas Laws
$\text{pH} = -\log[\text{H}^+]$	$PV = nRT$
$pK_w = \text{pH} + \text{pOH} = 14.00$	$(P + n^2a/V^2)(V - nb) = nRT$
$pK_w = pK_a + pK_b = 14.00$	$E_k = \frac{1}{2}m\nu^2$
$\text{pH} = pK_a + \log\{[\text{A}^-] / [\text{HA}]\}$	

Radioactivity	Kinetics
$t_{1/2} = \ln 2/k$	$t_{1/2} = \ln 2/k$
$A = kN$	$k = Ae^{-Ea/RT}$
$\ln(N_0/N_t) = kt$	$\ln[\text{A}] = \ln[\text{A}]_0 - kt$
$^{14}\text{C age} = 8033 \ln(A_0/A_t)$ years	$\ln\dfrac{k_2}{k_1} = \dfrac{E_a}{R}\left(\dfrac{1}{T_1} - \dfrac{1}{T_2}\right)$

Colligative Properties & Solutions	Thermodynamics & Equilibrium
$\Pi = cRT$	$\Delta G° = \Delta H° - T\Delta S°$
$P_{\text{solution}} = X_{\text{solvent}} \times P°_{\text{solvent}}$	$\Delta G = \Delta G° + RT \ln Q$
$c = kp$	$\Delta G° = -RT \ln K$
$\Delta T_f = K_f m$	$\Delta_{\text{univ}} S° = R \ln K$
$\Delta T_b = K_b m$	$K_p = K_c \left(\dfrac{RT}{100}\right)^{\Delta n}$

Miscellaneous	Mathematics
$A = -\log\dfrac{I}{I_0}$	If $ax^2 + bx + c = 0$, then $x = \dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$
$A = \varepsilon cl$	$\ln x = 2.303 \log x$
$E = -A\dfrac{e^2}{4\pi\varepsilon_0 r}N_A$	Area of circle $= \pi r^2$
	Surface area of sphere $= 4\pi r^2$