1. **Bond potential**

$$V(x) = \frac{1}{2}k(x - x_{\mathrm{eq}})^2$$
$$V(x) = D_e\left(1 - e^{-a(x-x_{\mathrm{eq}})}\right)^2$$
$$V(x) = k_{\mathrm{ub}}(x - x_{\mathrm{eq}})^2$$
$$V(x) = K(x^2 - x_0^2)^2$$
$$V(x) = \frac{\phi(x - x_0)^2}{[\lambda^2 - (x - x_0)^2]}$$

2. **Angle potential**

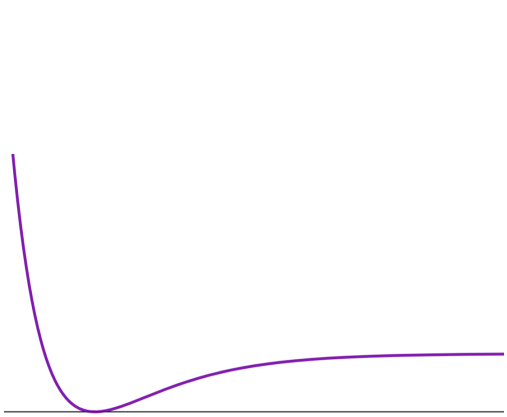
$$V(x) = k(x - x_{\mathrm{eq}})^2$$
$$V(x) = k_\theta \sin^2\left(\frac{nx}{2}\right)$$
$$V(x) = \frac{1}{2}k_\theta\left(\cos(x) - \cos(x_{\mathrm{eq}})\right)^2$$
$$V(x) = K\left[1 + \cos(x)\right]$$
$$V(x) = \frac{2.0}{n^2} \cdot C\left[1 - B(-1)^n \cos(nx)\right]$$
$$V(x) = K_2(x - x_0)^2 + K_3(x - x_0)^3 + K_4(x - x_0)^4$$

3. **Dihedral potential**

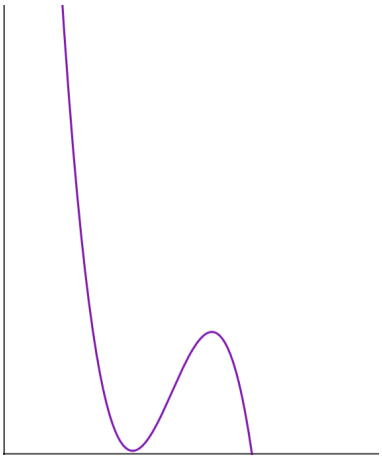
$$V(x) = k(x - x_{\mathrm{eq}})^2$$
$$V(x) = k\left[1 + \cos(nx - \delta)\right]$$
$$V(x) = V_1\left(1 + \cos(x)\right) + V_2\left(1 - \cos(2x)\right) + V_3\left(1 + \cos(3x)\right) + V_4\left(1 - \cos(4x)\right)$$
$$V(x) = V_1\left(1 + \cos(x)\right) + V_2\left(1 - \cos(2x)\right)$$
$$V(x) = V_1\left(1 + \cos(x)\right)$$
$$V(x) = \frac{1}{2}V_0\left(1 + \cos(x)\right)$$
$$V(x) = V_0\left(1 + \cos(nx)\right)$$
$$V(x) = V_0\left(1 - e^{-\alpha(x-x_0)^2}\right)$$
$$V(x) = V_0\left(1 - e^{-\alpha(\cos(x)-\cos(x_0))^2}\right)$$
$$V(x) = V_0\left(1 - e^{-\alpha(\sin(x))^2}\right)$$
$$V(x) = A\left[1 - \cos(x)\right] + B\left[1 + \cos(3x)\right] + C\left[1 + \cos\left(x + \frac{\pi}{4}\right)\right]$$
$$V(x) = \sum_{n=1,5} A_n \cos^{n-1}(x)$$

4. **van der Waals potential (non-bonded)**

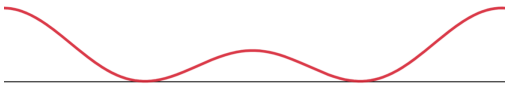
$$V_{NB}(x) = Ae^{-(x/\rho)} - \frac{C}{x^6}$$
$$V_{NB}(x) = \epsilon\left(\left[\frac{\sigma}{x}\right]^9 - 3\left[\frac{\sigma}{x}\right]^6\right)$$
$$V_{NB}(x) = 4\epsilon\left(\left[\frac{\sigma}{x}\right]^{12} - \left[\frac{\sigma}{x}\right]^6\right)$$



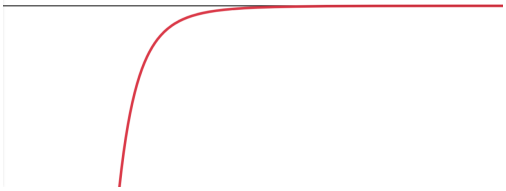
(a) Bond Potential



(b) Angle Potential



(c) Dihedral Potential



(d) van der Waals Potential