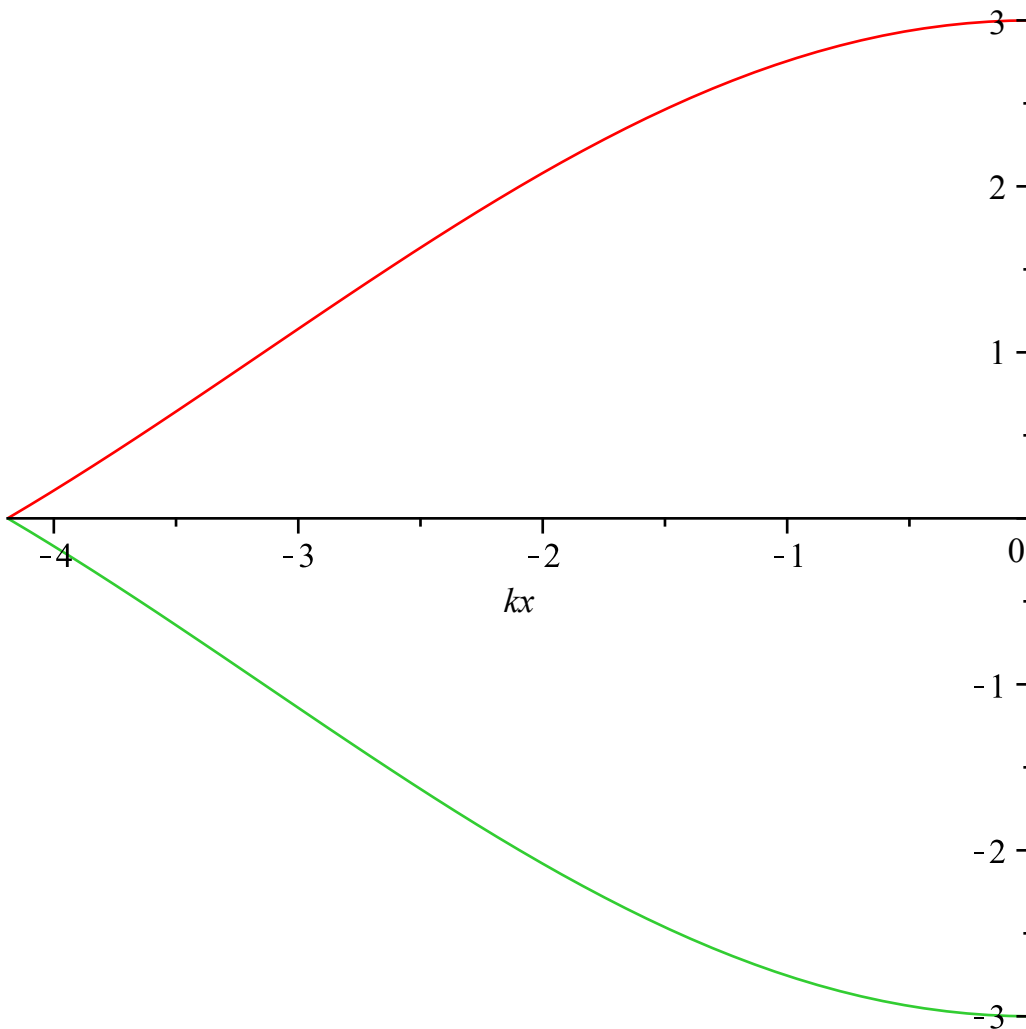


Graphite dispersion:

$$\begin{aligned} > f1 := (kx, ky) \rightarrow \text{sqrt}\left(1 + 4 \cdot \left(\cos\left(\frac{kx}{2}\right)\right)^2 + 4 \cdot \cos\left(\frac{kx}{2}\right) \cdot \cos\left(\frac{\text{sqrt}(3) \cdot ky}{2}\right)\right); \\ & \quad f1 := (kx, ky) \rightarrow \sqrt{1 + 4 \cos\left(\frac{1}{2} kx\right)^2 + 4 \cos\left(\frac{1}{2} kx\right) \cos\left(\frac{1}{2} \sqrt{3} ky\right)} \end{aligned} \quad (1)$$

$$\begin{aligned} > f2 := (kx, ky) \rightarrow -\text{sqrt}\left(1 + 4 \cdot \left(\cos\left(\frac{kx}{2}\right)\right)^2 + 4 \cdot \cos\left(\frac{kx}{2}\right) \cdot \cos\left(\frac{\text{sqrt}(3) \cdot ky}{2}\right)\right); \\ & \quad f2 := (kx, ky) \rightarrow -\sqrt{1 + 4 \cos\left(\frac{1}{2} kx\right)^2 + 4 \cos\left(\frac{1}{2} kx\right) \cos\left(\frac{1}{2} \sqrt{3} ky\right)} \end{aligned} \quad (2)$$

$$> \text{plot}\left(\{f1(kx, 0), f2(kx, 0)\}, kx = -\frac{4 \cdot \text{Pi}}{3} .. 0\right);$$



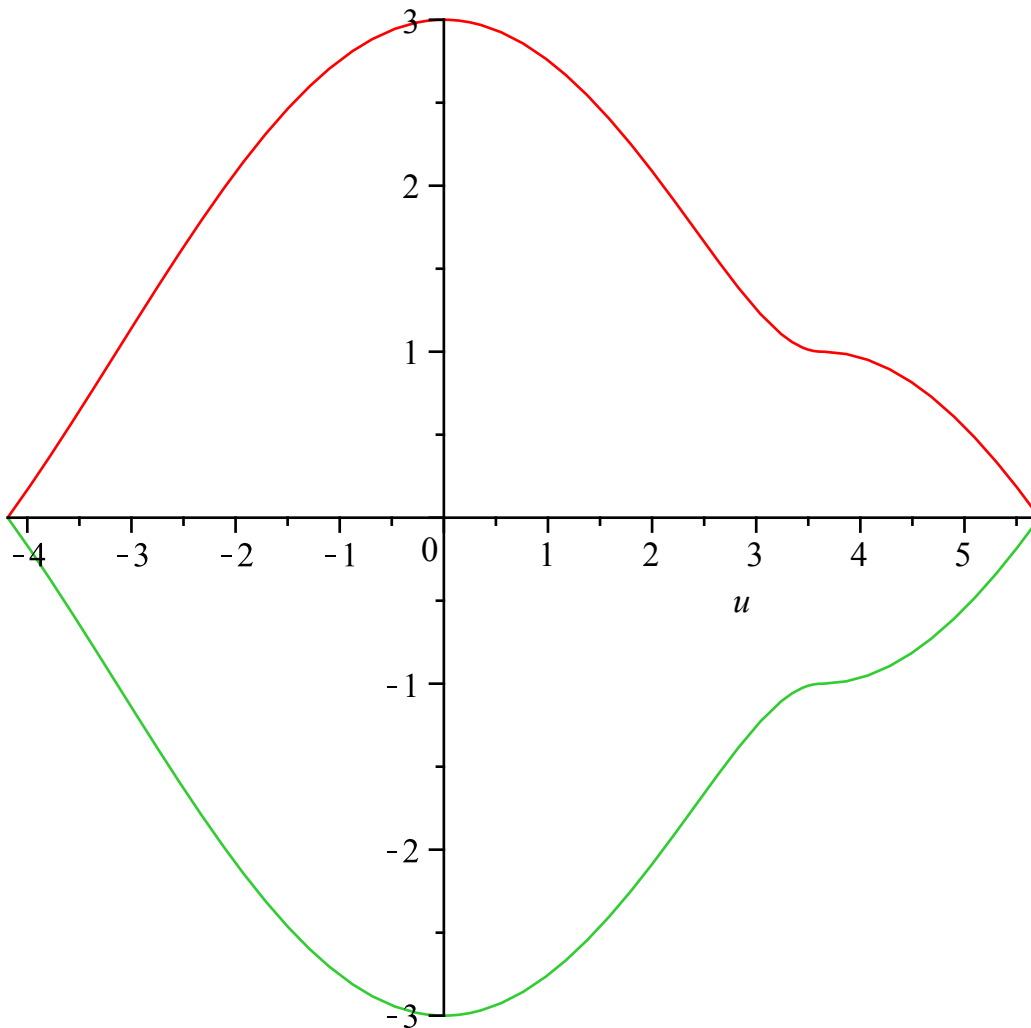
$$\begin{aligned} > g1 := u \rightarrow \text{piecewise}\left(u < 0, f1(u, 0), u > 0 \text{ and } u < \frac{2 \cdot \text{Pi}}{\text{sqrt}(3)}, f1(0, u), u > \frac{2 \cdot \text{Pi}}{\text{sqrt}(3)}, f1\left(u \right. \right. \\ & \quad \left. \left. - \frac{2 \cdot \text{Pi}}{\text{sqrt}(3)}, \frac{2 \cdot \text{Pi}}{\text{sqrt}(3)}\right)\right); \end{aligned} \quad (3)$$

$$g1 := u \rightarrow \text{piecewise} \left(u < 0, f1(u, 0), 0 < u \text{ and } u < \frac{2\pi}{\sqrt{3}}, f1(0, u), \frac{2\pi}{\sqrt{3}} < u, f1 \left(u - \frac{2\pi}{\sqrt{3}}, \frac{2\pi}{\sqrt{3}} \right) \right) \quad (3)$$

$$\text{> } g2 := u \rightarrow \text{piecewise} \left(u < 0, f2(u, 0), u > 0 \text{ and } u < \frac{2 \cdot \text{Pi}}{\text{sqrt}(3)}, f2(0, u), u > \frac{2 \cdot \text{Pi}}{\text{sqrt}(3)}, f2 \left(u - \frac{2 \cdot \text{Pi}}{\text{sqrt}(3)}, \frac{2 \cdot \text{Pi}}{\text{sqrt}(3)} \right) \right);$$

$$g2 := u \rightarrow \text{piecewise} \left(u < 0, f2(u, 0), 0 < u \text{ and } u < \frac{2\pi}{\sqrt{3}}, f2(0, u), \frac{2\pi}{\sqrt{3}} < u, f2 \left(u - \frac{2\pi}{\sqrt{3}}, \frac{2\pi}{\sqrt{3}} \right) \right) \quad (4)$$

$$\text{> } \text{plot} \left(\{g1(u), g2(u)\}, u = -\frac{4 \cdot \text{Pi}}{3} .. \frac{2 \cdot \text{Pi}}{\text{sqrt}(3)} + \frac{2 \cdot \text{Pi}}{3} \right);$$



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