> $h \coloneqq \mathit{unapply}(\mathit{MmaTranslator}{:-}\mathit{FromMma}($"Sqrt[\[Pi]] Gamma[3/4] Hypergeometric0F1Regularized[5/4, -(s

$$h \coloneqq s \mapsto \frac{\sqrt{\pi} \cdot \Gamma\left(\frac{3}{4}\right) \cdot \mathrm{hypergeom}\left(\left[\right], \left[\frac{5}{4}\right], -\frac{s^2}{4}\right)}{\Gamma\left(\frac{5}{4}\right)} \tag{1}$$

> $h \coloneqq \mathit{unapply}(\mathit{simplify}(h(s)), s);$

$$h \coloneqq s \mapsto \frac{\sqrt{\pi} \cdot \Gamma\left(\frac{3}{4}\right) \cdot \mathrm{BesselJ}\left(\frac{1}{4}, s\right) \cdot 2^{\frac{1}{4}}}{s^{\frac{1}{4}}} \tag{2}$$

> $j \coloneqq (n, y) \rightarrow \mathrm{BesselJ}(n + \frac{1}{2}, y) \cdot \mathrm{sqrt}(\frac{\mathrm{Pi}}{2 \cdot y})$

$$j \coloneqq (n, y) \mapsto \mathrm{BesselJ}\left(n + \frac{1}{2}, y\right) \cdot \sqrt{\frac{\pi}{2 \cdot y}} \tag{3}$$

> $\mathrm{pochhammer}(1, -\frac{1}{2})$

$$\sqrt{\pi} \tag{4}$$

> $\mathrm{psi} \coloneqq \mathit{unapply}(\sqrt{\frac{8 \cdot n + 2}{\mathrm{Pi}}} \cdot (-1)^n \cdot j(2 \cdot n, y), n, y)$

$$\psi \coloneqq (n, y) \mapsto \frac{\sqrt{\frac{8 \cdot n + 2}{\pi}} \cdot (-1)^n \cdot \mathrm{BesselJ}\left(2 \cdot n + \frac{1}{2}, y\right) \cdot \sqrt{2} \cdot \sqrt{\frac{\pi}{y}}}{2} \tag{5}$$

> $\mathit{fuck} \coloneqq (x) \rightarrow \mathit{sum}(\mathrm{sqrt}(\mathrm{lambda}(n)) \cdot \mathrm{psi}(n, x), n = 0..\mathrm{infinity})$

$$\mathit{fuck} \coloneqq x \mapsto \sum_{n=0}^{\infty} \sqrt{\lambda(n)} \cdot \psi(n, x) \tag{6}$$

> $\mathit{evalf}(\mathit{fuck}(2.3))$

$$-0.02643929057 \tag{7}$$

> $\mathit{evalf}(h(2.3))$

$$0.5125173325 \tag{8}$$

> $h(0)$

Error, (in h) numeric exception: division by zero

> $\mathit{limit}(h(t), t = 0)$

$$\frac{2\sqrt{2}\,\Gamma\left(\frac{3}{4}\right)^2}{\sqrt{\pi}} \tag{9}$$

> $\mathit{plot}(h(x), x = 0..40)$

> $\mathit{evalf}(\mathrm{sqrt}(\mathrm{BesselJ}(0, 2.3)))$

$$0.2356688025 \tag{10}$$

>
> $evalf\left(\dfrac{fuck(1.1, 2.3)}{\text{BesselJ}(0, 1.1 - 2.3)}\right)$

$$0.3707841547 \tag{11}$$

> $evalf\left(\dfrac{fuck(1.1, 2.3)}{\text{BesselJ}(0, 1.1 - 2.3)}\right)$

$$0.3707841547 \tag{12}$$

> $evalf\left(\dfrac{1}{\text{Pi}}\right)$

$$0.3183098861 \tag{13}$$

> $evalfe()$

$$0.6711327443 \tag{14}$$

>
> lambda $:=$ $unapply(simplify(int(\text{psi}(n, x) \cdot \text{BesselJ}(0, x), x = 0..\text{infinity})), n)$ assuming $n ::$ $nonnegint$

$$\lambda := n \mapsto \frac{\sqrt{8 \cdot n + 2} \cdot \Gamma\left(n + \frac{1}{2}\right)^2}{2 \cdot \sqrt{\pi} \cdot \Gamma(n+1)^2} \tag{15}$$

> $sum(\text{lambda}(n) \cdot (\text{psi}(n, x)), n = 0..\text{infinity})$

$$\sum_{n=0}^{\infty} \frac{\sqrt{8n+2}\, \Gamma\left(n + \frac{1}{2}\right)^2 \sqrt{\frac{8n+2}{\pi}}\, (-1)^n \, \text{BesselJ}\left(2n + \frac{1}{2}, x\right) \sqrt{2} \sqrt{\frac{\pi}{x}}}{4\sqrt{\pi}\, \Gamma(n+1)^2} \tag{16}$$

> $evalf(eval(\mathbf{(16)}, x = 2.3))$

$$0.05553978444 \tag{17}$$

> $evalf(\text{BesselJ}(0, 2.3))$

$$0.05553978445 \tag{18}$$

> $evalf(eval(sum(\text{sqrt}(\text{lambda}(n)) \cdot \text{psi}(n, x), n = 0..\text{infinity}), x = 5.3))$

$$-0.01804174321 \tag{19}$$

> $evalf(\text{BesselJ}(0, 5.3))$

$$-0.07580311159 \tag{20}$$

> $simplify0(int(h(s)^2, s))$

$$\frac{8\Gamma\left(\frac{3}{4}\right)^4 s\,\mathrm{hypergeom}\left(\left[\frac{1}{2},\frac{3}{4}\right],\left[\frac{5}{4},\frac{3}{2},\frac{3}{2}\right],-s^2\right)}{\pi} \tag{21}$$

> $plot(\mathbf{(21)}, s = 0..40)$
> $limit(\mathbf{(21)}, s = \mathrm{infinity})$

$$\pi^2 \tag{22}$$

>
> $funcSeq := [seq(x^{(2\,n)}, n = 0\,..\,8)]$:
$w := unapply(simplify(\mathrm{sqrt}(\frac{1}{\mathrm{sqrt}(1-x^2)})), x)$:
$interval := -1\,..\,1$:
$InnerProduct := (f, g) \rightarrow int(f * g * w(x), x = interval)$:
$P := []$:
for i to $nops(funcSeq)$ do $f := funcSeq[i] - (add((InnerProduct(funcSeq[i], P[j])) * P[j], j = 1\,..\,i-1))$:
$P := [op(P), simplify(f/\mathrm{sqrt}(InnerProduct(f, f)))]$:
end do:

> $int(P[2] \cdot P[3] \cdot \mathrm{sqrt}(\frac{1}{\mathrm{sqrt}(1-x^2)}), x = -1..1)$

$$0 \tag{23}$$

> $plot(P, x = -1..1)$
> $Q := [seq(simplify(int(P[n] \cdot \exp(-I \cdot x \cdot y), x = -1..1)), n = 1..nops(P))]$:
> $int(Q[1] \cdot h(x-y), y = 0..\mathrm{infinity})$

$$\int_0^{\infty} \frac{\sqrt{2}\,\pi^{\frac{3}{4}} \sin(y)\,\mathrm{BesselJ}\left(\frac{1}{4}, x-y\right)}{y\,(x-y)^{\frac{1}{4}}} dy \tag{24}$$

> $Q[1]$

$$\frac{2^{\frac{1}{4}}\pi^{\frac{1}{4}} \sin(y)}{y\Gamma\left(\frac{3}{4}\right)} \tag{25}$$

> $limit(h(t), t = 0)$

$$\frac{2\sqrt{2}\,\Gamma\left(\frac{3}{4}\right)^2}{\sqrt{\pi}} \tag{26}$$

> $evalf([\mathrm{sqrt}(\mathbf{(24)}), \mathbf{(26)}])$

$$[2.205257706, 2.396280468] \tag{27}$$

> $plot(Q, y = 1..30)$
> $S := []$:
for i to $nops(Q)$ do $f := Q[i] - (add((int(Q[i] \cdot Q[j], y = 0..\mathrm{infinity})) * Q[j], j =$

$1 .. i-1))$:
$S := [op(S), simplify(f/\mathrm{sqrt}(int(f \cdot f, y = 0..\mathrm{infinity})))]$:
end do:
> $Digits := 40$:
> $Q[1], S[1]$

$$\frac{2^{\frac{1}{4}}\,\pi^{\frac{1}{4}}\,\sin(y)}{y\Gamma\left(\frac{3}{4}\right)}, \frac{\sqrt{2}\,\sin(y)}{\sqrt{\pi}\,y} \tag{28}$$

> $[seq(int(S[k] \cdot h(y), y = 0..\mathrm{infinity}), k = 1..4)]$

$$\left[2\Gamma\left(\frac{3}{4}\right)^2, \frac{2\pi^{\frac{3}{2}}\Gamma\left(\frac{3}{4}\right)^2 2^{\frac{1}{4}}}{\sqrt{\sqrt{2}\,\pi^3 + 42\sqrt{2}\,\Gamma\left(\frac{3}{4}\right)^4 - 4\pi^{\frac{3}{2}}\Gamma\left(\frac{3}{4}\right)^2}}, \frac{112\,2^{\frac{1}{4}}\,\pi^{\frac{3}{2}}\sqrt{15}\,\Gamma\left(\frac{3}{4}\right)^2}{5\sqrt{17227\sqrt{2}\,\pi^3 + 889728\sqrt{2}\,\Gamma\left(\frac{3}{4}\right)^4 - 89248\pi^{\frac{3}{2}}\Gamma\left(\frac{3}{4}\right)^2}}, \frac{}{\sqrt{30187}} \tag{29}$$

> $evalf(\mathbf{(29)})$

$$[3.003292189361259431385684511618701903364,\ 1.655340177346592511697212309422638340199,\ 0.5113189621180808947286423648995738323325,\ 0.2568272866444580562039925201540020101747] \tag{30}$$

> $evalf(\mathbf{(29)})$

$$0.4886435441678435587121541791815017611107 \tag{31}$$

>
> $plot(Q, y = 1..40)$
> $plot(S, y = 1..40)$
> $[seq(simplify(int(S[n] \cdot h(y), y = 0..\mathrm{infinity})), n = 1..4)]$

$$\left[2\Gamma\left(\frac{3}{4}\right)^2, \frac{2\pi^{\frac{3}{2}}\Gamma\left(\frac{3}{4}\right)^2 2^{\frac{1}{4}}}{\sqrt{-4\pi^{\frac{3}{2}}\Gamma\left(\frac{3}{4}\right)^2 + \left(42\Gamma\left(\frac{3}{4}\right)^4 + \pi^3\right)\sqrt{2}}}, \frac{112\,2^{\frac{1}{4}}\,\pi^{\frac{3}{2}}\sqrt{15}\,\Gamma\left(\frac{3}{4}\right)^2}{5\sqrt{17227\sqrt{2}\,\pi^3 - 89248\pi^{\frac{3}{2}}\Gamma\left(\frac{3}{4}\right)^2 + 889728\sqrt{2}\,\Gamma\left(\frac{3}{4}\right)^4}}, \frac{}{\sqrt{3018}} \tag{32}$$

> $cool := unapply(sum(S[n] \cdot \mathbf{(32)}[n], n = 1..4), y)$:
> $S[1]$

$$\frac{\sqrt{2}\,\sin(y)}{\sqrt{\pi}\,y} \tag{33}$$

> $Digits := 40$:
> $Z1 := int(simplify(eval(S[1], y = x - y) \cdot \mathrm{psi}(0, x)), x = 0..\mathrm{infinity})$ assuming $x > 0$:
> $Z2 := int(simplify(eval(S[2], y = x - y) \cdot \mathrm{psi}(0, x)), x = 0..\mathrm{infinity})$ assuming $x > 0$:

> $Z3 \coloneqq int(simplify(eval(S[3], y = x-y) \cdot \mathrm{psi}(0, x)), x = 0..\mathrm{infinity})$ assuming $x >$ 0:
> $plot([Z1 + Z2 + Z3, h(y)], y = -10..40)$
> $restart$
> $simplify(S[2])$

$$\frac{2^{\frac{1}{4}} \left(\sin(y)\sqrt{2}\,\pi^{\frac{3}{2}} y^2 + 18\Gamma\left(\frac{3}{4}\right)^2 \sin(y)\, y^2 + 60\Gamma\left(\frac{3}{4}\right)^2 \cos(y)\, y - 60\Gamma\left(\frac{3}{4}\right)^2 \sin(y)\right)}{\sqrt{-4\pi^{\frac{3}{2}}\Gamma\left(\frac{3}{4}\right)^2 + \left(42\Gamma\left(\frac{3}{4}\right)^4 + \pi^3\right)\sqrt{2}}\,\sqrt{\pi}\, y^3} \tag{34}$$

> $plot([cool(y), h(y)], y = 1..40)$
> $evalf(\mathbf{(32)})$

$$[3.003292188, 1.655340178, 0.5113189623, 0.2568272869] \tag{35}$$

> ? $MmaTranslator$
> $simplify(int(S[5] \cdot h(y), y = 0..\mathrm{infinity}))$

$$\frac{6\sqrt{5005}\,\Gamma\left(\frac{3}{4}\right)\left(\int_0^\infty \frac{85865472\left(\frac{302171 y^2\left(\left(y^6 - \frac{411888410}{2115197} y^4 + \frac{14330150952}{3323881} y^2 - \frac{220273794000}{23267167}\right)\sin(y) + \frac{6020686 y \cos(y)\left(y^4 - \frac{790778196}{13635083} y^2 + \frac{647864\cdots}{13635\cdots}\cdots\right.}{302171}\cdots\right.}{1115136}\cdots\right.}{\cdots}\cdots\right.}{\sqrt{15724086048552679854\sqrt{2}\,\pi^3 + 9298462762113\cdots}} \tag{36}$$

> $evalf(\%);$

$$0.5113189623 \tag{37}$$

> $plot(S, y = 1..40)$
> $qlim \coloneqq [seq(limit(Q[n], y = 0), n = 1..nops(Q))]:$
> $qlim$

$$\left[\frac{2^{\frac{1}{4}}\pi^{\frac{1}{4}}}{\Gamma\left(\frac{3}{4}\right)}, -\frac{\sqrt{3}\,2^{\frac{3}{4}}\pi^{\frac{1}{4}}}{12\Gamma\left(\frac{3}{4}\right)}, -\frac{\sqrt{595}\,2^{\frac{3}{4}}\pi^{\frac{1}{4}}}{560\Gamma\left(\frac{3}{4}\right)}, -\frac{5\,2^{\frac{1}{4}}\sqrt{231}\,\pi^{\frac{1}{4}}}{2464\Gamma\left(\frac{3}{4}\right)}, -\frac{11\sqrt{195}\,2^{\frac{3}{4}}\pi^{\frac{1}{4}}}{11520\Gamma\left(\frac{3}{4}\right)}, -\frac{2^{\frac{1}{4}}\sqrt{1893749}\,\pi^{\frac{1}{4}}}{107008\Gamma\left(\frac{3}{4}\right)}, -\frac{7\,2^{\frac{1}{4}}\sqrt{676039}\,\pi^{\frac{1}{4}}}{612352\Gamma\left(\frac{3}{4}\right)}, -\frac{19\sqrt{391}\,2^{\frac{3}{4}}\pi^{\frac{1}{4}}}{73728\Gamma\left(\frac{3}{4}\right)}, -\frac{15\sqrt{86822723}\,2^{\frac{3}{4}}\pi^{\frac{1}{4}}}{34537472\Gamma\left(\frac{3}{4}\right)}\right] \tag{38}$$

> $LREtools[GuessRecurrence](qlim, a(n))$

$$FAIL \tag{39}$$

> $GR := [seq(piecewise(y = 0, qlim[n], Q[n]), n = 1..nops(Q))]$:

>

>

> $j := (n, y) \to \mathrm{BesselJ}(n + \frac{1}{2}, y) \cdot \mathrm{sqrt}(\frac{\mathrm{Pi}}{2 \cdot y})$

$$j := (n, y) \mapsto \mathrm{BesselJ}\left(n + \frac{1}{2}, y\right) \cdot \sqrt{\frac{\pi}{2 \cdot y}} \tag{40}$$

> $\mathrm{psi} := unapply(\sqrt{\frac{8 \cdot n + 2}{\mathrm{Pi}}} \cdot (-1)^n \cdot j(2 \cdot n, y), n, y)$

$$\psi := (n, y) \mapsto \frac{\sqrt{\frac{8 \cdot n+2}{\pi}} \cdot (-1)^n \cdot \mathrm{BesselJ}\left(2 \cdot n + \frac{1}{2}, y\right) \cdot \sqrt{2} \cdot \sqrt{\frac{\pi}{y}}}{2} \tag{41}$$

> $simplify(int(eval(Q[1], y = x - y) \cdot \mathrm{psi}(0, x), x = 0..\mathrm{infinity}))$ assuming $y > 0$

$$\frac{2^{\frac{3}{4}} \left(-2\cos(y)\,\mathrm{Ei}_1(-2\,\mathrm{I}y) + (-2\,\mathrm{I}\cos(y) + 2\sin(y))\,\mathrm{Si}(2y) + (\pi\mathrm{I} - 2\gamma - 2\ln(2) - 2\ln(y))\cos(y) + 2\pi\sin(y)\right)}{4\pi^{\frac{1}{4}} y \Gamma\left(\frac{3}{4}\right)} \tag{42}$$

> $simplify(int(eval(Q[1], y = x - y) \cdot \mathrm{psi}(2, x), x = 0..\mathrm{infinity}))$ assuming $y > 0$

$$\frac{3\left(\left(\left(-2y^4 + 90y^2 - 210\right)\cos(y) + \left(20y^3 - 210y\right)\sin(y)\right)\mathrm{Ei}_1(-2\,\mathrm{I}y) + \left(\left(-210y + 20y^3 + 90\,\mathrm{I}y^2 - 2\,\mathrm{I}y^4 - 210\,\mathrm{I}\right)\right.\right.}{} \tag{43}$$

>

$$\frac{7}{3} \tag{44}$$

> $simplify(int(eval(Q[1], y = x - y) \cdot \mathrm{psi}(3, x), x = 0..\mathrm{infinity}))$ assuming $y > 0$

$$-\frac{21\, 2^{\frac{3}{4}} \left(\left(\left(-990 + 450y^2 - 20y^4 + \frac{2}{21}y^6\right)\cos(y) - 2\sin(y)\,y\left(y^4 - 60y^2 + 495\right)\right)\mathrm{Ei}_1(-2\,\mathrm{I}y) + \left(\left(-990\,\mathrm{I} + \frac{2\,\mathrm{I}y^6}{21} - \right.\right.\right.}{} \tag{45}$$

> $plot([\mathbf{(42)} + \mathbf{(43)} + \mathbf{(45)}], y = 0..40)$

> $simplify(int(eval(R[1], y = x - y) \cdot \mathrm{psi}(n, x), y = 0..\mathrm{infinity}))$ assuming $x > 0$

$$\frac{2^{\frac{1}{4}} \pi^{\frac{1}{4}} \sqrt{4n+1}\, (-1)^n \,\mathrm{BesselJ}\left(2n + \frac{1}{2}, x\right)(\pi + 2\,\mathrm{Si}(x))}{2\sqrt{x}\,\Gamma\left(\frac{3}{4}\right)} \tag{46}$$

> $simplify(int(eval(R[2], y = x - y) \cdot \mathrm{psi}(n, x), y = 0..\mathrm{infinity}))$ assuming $x > 0$

$$-\frac{\sqrt{4n+1}\, 2^{\frac{3}{4}} \sqrt{3}\, (-1)^n \,\mathrm{BesselJ}\left(2n + \frac{1}{2}, x\right) \pi^{\frac{1}{4}} \left(\pi x^2 + 2\,\mathrm{Si}(x)\, x^2 + 5\cos(x)\, x - 5\sin(x)\right)}{4x^{\frac{5}{2}}\,\Gamma\left(\frac{3}{4}\right)} \tag{47}$$

> $simplify(int(eval(R[3], y = x - y) \cdot \mathrm{psi}(n, x), y = 0..\mathrm{infinity}))$ assuming $x > 0$

$$\frac{\left(\left(-3x^3+234x\right)\cos(x)+\left(81x^2-234\right)\sin(x)+2x^4\left(\pi+2\,\mathrm{Si}(x)\right)\right)(-1)^n\,2^{\frac{3}{4}}\sqrt{595}\,\pi^{\frac{1}{4}}\sqrt{4n+1}\,\mathrm{BesselJ}\left(2n+\frac{1}{2},x\right)}{112x^{\frac{9}{2}}\,\Gamma\left(\frac{3}{4}\right)} \tag{48}$$

> $simplify(int(eval(R[4], y = x - y) \cdot \mathrm{psi}(n, x), y = 0..\mathrm{infinity}))$ assuming $x > 0$

$$-\frac{25\left(\left(\frac{117}{20}x^5-884x^3+9282x\right)\cos(x)+\left(-\frac{377}{4}x^4+3978x^2-9282\right)\sin(x)+x^6\left(\pi+2\,\mathrm{Si}(x)\right)\right)\sqrt{231}\,\pi^{\frac{1}{4}}\,\mathrm{BesselJ}\big(2}{616x^{\frac{13}{2}}\,\Gamma\left(\frac{3}{4}\right)} \tag{49}$$

> $int(h(x - y) \cdot \mathrm{psi}(0, x), x = 0..\mathrm{infinity})$

$$\int_0^{\infty}\frac{\Gamma\left(\frac{3}{4}\right)\mathrm{BesselJ}\left(\frac{1}{4},x-y\right)2^{\frac{3}{4}}\sqrt{\frac{1}{\pi}}\,\sin(x)\sqrt{\frac{\pi}{x}}}{(x-y)^{\frac{1}{4}}\sqrt{x}}\,dx \tag{50}$$

> $R[1]$

$$\begin{cases}\frac{2^{\frac{1}{4}}\pi^{\frac{1}{4}}}{\Gamma\left(\frac{3}{4}\right)} & y=0\\ \frac{2^{\frac{1}{4}}\pi^{\frac{1}{4}}\sin(y)}{y\Gamma\left(\frac{3}{4}\right)} & otherwise\end{cases} \tag{51}$$

> $int(R[4] \cdot h(y), y = 0..\mathrm{infinity})$

$$0 \tag{52}$$

> $R[1]$

$$\begin{cases}\frac{2^{\frac{1}{4}}\pi^{\frac{1}{4}}}{\Gamma\left(\frac{3}{4}\right)} & y=0\\ \frac{2^{\frac{1}{4}}\pi^{\frac{1}{4}}\sin(y)}{y\Gamma\left(\frac{3}{4}\right)} & otherwise\end{cases} \tag{53}$$

>

> $plot(eval([R[1], h(y)]), y = 10..40)$ assuming $y > 0$

> $T0 := x \rightarrow evalf(sum(\mathbf{(49)}, n = 0..\mathrm{infinity}))$

$$T0 := x \mapsto evalf\left(\sum_{n=0}^{\infty}\frac{2^{\frac{1}{4}}\cdot\pi^{\frac{1}{4}}\cdot\sqrt{4\cdot n+1}\cdot(-1)^n\cdot\mathrm{BesselJ}\left(2\cdot n+\frac{1}{2},x\right)\cdot(\pi+2\cdot\mathrm{Si}(x))}{2\cdot\sqrt{x}\cdot\Gamma\left(\frac{3}{4}\right)}\right) \tag{54}$$

> $T0(50)$

$$0.694963046394114329693480069680923842187955506682 89 \tag{55}$$

> $identify(\%)$

$$1.6203072135490037964031307528142182394016460992060 \tag{56}$$

> $plot(T0(x), x = 1..40, numpoints = 10)$

> $evalf(qlim)$

$$[1.2919960074815039352250155313215753868047540488077, \\ -0.26372758067023017667367968873263465960188389299788, \\ -0.079587822977365377164737043736925066723833552034551, \\ -0.039847076390798901044323244907309271068750757938882, \\ -0.024363163580921390183284426196598896497406523783581, \\ -0.016615221403589924483882721598533733575655269793582, \\ -0.012143501934248353091005674889882946710960910765781, \\ -0.0093107720887866508329712410511872322488968599373591, \\ -0.0073942407012649535541762743085938008627232267738976] \quad (57)$$

> $evalf(T0(0))$

Error, (in T0) numeric exception: division by zero

> $simplify(\mathbf{(43)} + \mathbf{(45)} + \mathbf{(46)} + \mathbf{(47)} + \mathbf{(48)} + \mathbf{(49)})$

$$-\frac{585\, 2^{\frac{1}{4}} \left(\sqrt{4n+1} \left(\frac{20x^6 \left(\left(-\frac{11\sqrt{5}\sqrt{7}\sqrt{17}}{25} + \frac{154\sqrt{3}}{25} \right)\sqrt{2} + \sqrt{3}\sqrt{7}\sqrt{11} - \frac{308}{25} \right) \pi^{\frac{3}{2}}}{117} + \left(\frac{22x^2 \left(\sqrt{5}\sqrt{17} \left(-\frac{4x^4 \operatorname{Si}(x)}{3} + \cos(x)x^3 - 27\sin(x) \right.\right.}{} \right.\right.\right.}{} \quad (58)$$

>

$$\frac{7}{3} \quad (59)$$

> $plot(\mathbf{(58)}, y = -20..50, axes, gridlines = true)$

Warning, expecting only range variable y in expression -585/2464*2^(1/4)/x^(13/2)*((4*n+1)^(1/2)*(20/117

> $plot(R, y = -10..40)$

> $plot(P, x = -1..1)$

> $Q := [seq(simplify(int(P[n] \cdot \exp(-I \cdot x \cdot y), x = -1..1)), n = 1..nops(P))]$:

> $int(Q[1] \cdot Q[3], y = 0..\text{infinity})$

$$-\frac{\pi^{\frac{3}{2}}\sqrt{595}}{560\Gamma\left(\frac{3}{4}\right)^2} \quad (60)$$

> $plot(Q[3], y = 0..30)$

> $h(y)$

$$-\frac{\frac{\mathrm{I}}{2} \left(\mathrm{I}\,(-\mathrm{I}y)^{\frac{1}{4}} \left(\mathrm{BesselI}\left(\frac{1}{4}, \mathrm{I}y\right) - \mathrm{StruveL}\left(\frac{1}{4}, \mathrm{I}y\right) \right) (\mathrm{I}y)^{\frac{3}{4}} + y \left(\mathrm{StruveL}\left(\frac{1}{4}, -\mathrm{I}y\right) - \mathrm{BesselI}\left(\frac{1}{4}, -\mathrm{I}y\right) \right) \right) \Gamma\left(\frac{3}{4}\right) 2^{\frac{1}{4}} \sqrt{\pi}\, (-}{y^2} \quad (61)$$

> $int(Q[1] \cdot h(y), y = 0..\text{infinity})$

$$\int_0^\infty \frac{-\frac{I}{2}\sqrt{2}\,\pi^{\frac{3}{4}}\sin(y)\left(I\,(-Iy)^{\frac{1}{4}}\left(\mathrm{BesselI}\left(\frac{1}{4}, Iy\right) - \mathrm{StruveL}\left(\frac{1}{4}, Iy\right)\right)(Iy)^{\frac{3}{4}} + y\left(\mathrm{StruveL}\left(\frac{1}{4}, -Iy\right) - \mathrm{BesselI}\left(\frac{1}{4}, -Iy\right)\right)}{y^3} \tag{62}$$

> $evalf(\mathbf{(62)})$

> $plot(\dfrac{2^{\frac{1}{4}}\pi^{\frac{1}{4}}\sin(y)}{\Gamma(\frac{3}{4})y(-y^2+1)^{\frac{1}{4}}}, y = 0..20)$

> $plot(Q, y = 0..50)$

> $plot(P, x = -1..1)$

>