Fast Near-field Method for Ultrasound simulation

Jens Munk Hansen

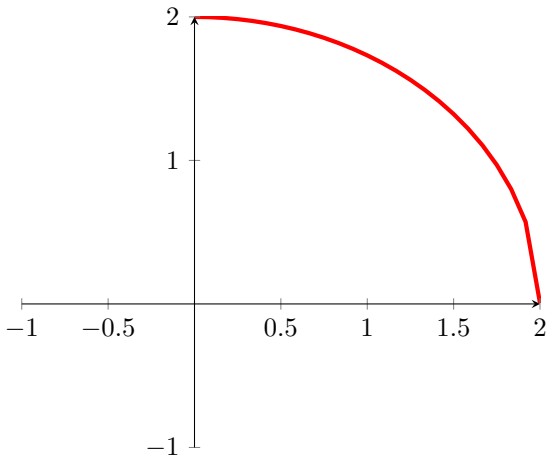
December 17, 2015

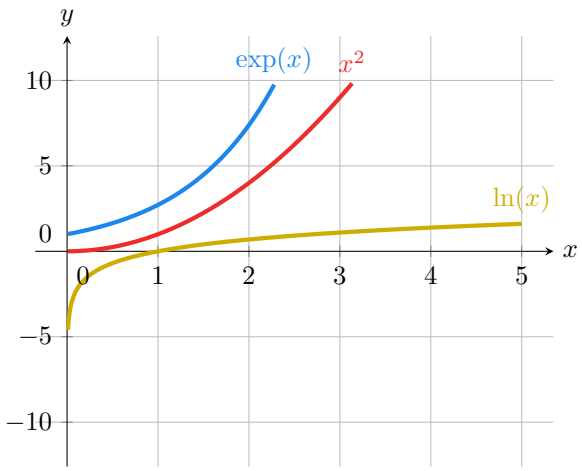
Abstract

Bla

$$H_{s,l}(z;k) = -\frac{1}{2\pi}\left(\frac{\mathrm{i}\pi}{2k}\left[\exp\left(-\mathrm{i}k\sqrt{z^2+s^2+l^2}\right) - \exp\left(-\mathrm{i}kz\right)\right]\right.$$
$$-\int_{\sqrt{z^2+s^2}}^{\sqrt{z^2+s^2+l^2}} \arccos\left\{\frac{s}{\sqrt{\beta^2-z^2}}\right\}\exp\left(-\mathrm{i}k\beta\right)d\beta$$
$$\left.-\int_{\sqrt{z^2+l^2}}^{\sqrt{z^2+s^2+l^2}} \arccos\left\{\frac{l}{\sqrt{\beta^2-z^2}}\right\}\exp\left(-\mathrm{i}k\beta\right)d\beta\right) \tag{1}$$

$$\arccos\left(s/\sqrt{a^2}\right) = \arctan\left(\frac{\sqrt{a^2-x^2}}{x}\right) \tag{2}$$




y
exp(x)
x^2
ln(x)
10
5
0
−5
−10
x
0
1
2
3
4
5