WolframAlpha computational intelligence™

$$\frac{d}{dR}\left(\frac{\left(\frac{(x*x)}{R}\right)}{\left(1+\text{sqrt}\left(1-(1+k)*\frac{(x*x)}{(R*R)}\right)\right)}+d\right)$$

NATURAL LANGUAGE | MATH INPUT

CALCULUS & SUMS

Derivative — Step-by-step solution

$$\frac{\partial}{\partial R}\left(\frac{\frac{x\,x}{R}}{1+\sqrt{1-\frac{(1+k)\,(x\,x)}{R\,R}}}+d\right)=-\frac{x^2}{R^2\sqrt{1-\frac{(k+1)\,x^2}{R^2}}\left(\sqrt{1-\frac{(k+1)\,x^2}{R^2}}+1\right)}$$

Alternate forms

$$\frac{x^2}{(k+1)\,x^2-R^2\left(\sqrt{1-\frac{(k+1)\,x^2}{R^2}}+1\right)}$$

$$-\frac{x^2}{R^2\sqrt{1-\frac{(k+1)\,x^2}{R^2}}\left(\sqrt{1-\frac{(k+1)\,x^2}{R^2}}+1\right)}$$

$$-\frac{x^2}{R^2\sqrt{-\frac{(k+1)\,x^2-R^2}{R^2}}\left(\sqrt{-\frac{(k+1)\,x^2-R^2}{R^2}}+1\right)}$$

Partial fraction expansion — Step-by-step solution

$$-\frac{x^2\sqrt{1-\frac{(k+1)\,x^2}{R^2}}}{-k\,x^2+R^2-x^2}-\frac{\sqrt{1-\frac{(k+1)\,x^2}{R^2}}}{k+1}+\frac{1}{k+1}$$

Alternate form assuming k, R, and x are positive

$$\frac{x^2}{}$$