$$\frac{d}{dx}\frac{f(x)}{g(x)} = \frac{f'(x)\cdot g(x) - f(x)\cdot g'(x)}{(g(x))^2}$$

or $\frac{d}{dx}\frac{hi}{lo} = \frac{lo\ di\ hi - hi\ di\ lo}{lo \cdot lo}$ ← "square below" rhymes with "hi di lo"

($di\ lo = g'(x)$)

$\frac{d}{dx}\frac{\sin(x)}{4x^2+2}$

Let $f(x) = \sin(x)$, then $f'(x) = \cos(x)$ Also, $\frac{d}{dx}\cos(x) = -\sin(x)$

Let $g(x) = 4x^2+2$, then $g'(x) = 8x$

$$\text{so } \frac{d}{dx}\frac{\sin(x)}{4x^2+2} = \frac{\cos(x)(4x^2+2) - \sin(x)(8x)}{(4x^2+2)^2}$$

$\frac{d}{dx}\frac{\cos x}{8x^3+3x} =$

$\frac{d}{dx}\frac{7x^4+10}{\cos x} =$

$\frac{d}{dx}\frac{\sin(x)+1}{\cos(x)} =$

$\frac{d}{dx}\frac{x^3+\sqrt{x}}{x^4} =$

$\frac{d}{ds}\frac{4s+3}{\sin(s)+\cos(s)} =$

$\frac{d}{dr}\frac{r^3+3}{\sqrt{r^3}} =$

$\frac{d}{dx}\tan(x) = \frac{d}{dr}\frac{\sin(x)}{\cos(x)} =$

$\frac{d}{dt}\frac{t^2+\sin t}{\sqrt{t^3}+\cos t} =$

$\frac{d}{dq}\frac{4\sin(q)-\sqrt{q}}{\sqrt{q^3}+q^{2/3}} =$

$\frac{d}{dy}\frac{5y^{-2}+\frac{1}{y}}{3y^2} =$