1) $f(x) = \underset{f(x)}{e^x} \cdot \underset{g(x)}{\cos x}$

$f(x) = e^x \quad g(x) = \cos x$

$f'(x) = e^x \quad g'(x) = -\sin x$

$f'(x) = e^x(-\sin x) + \cos x \cdot e^x$

$f'(x) = e^x(-\sin x + \cos x)$

Quotient Rule:

$$\frac{d}{dx}\left[\frac{f(x)}{g(x)}\right] = \frac{g(x)f'(x) - f(x)g'(x)}{[g(x)]^2}$$

Lo Dee Hi − Hi Dee Lo over Lo squared

Ex 1) $s(t) = \underset{f(x)}{\frac{t^2+2}{2t-7}}$ $\underset{g(x)}{}$

$f(x) = t^2+2 \quad g(x) = 2t-7$

$f'(x) = 2t \quad g'(x) = 2$

$$s'(t) = \frac{(2t-7)(2t) - (t^2+2)(2)}{(2t-7)^2} = \frac{4t^2-14t-(2t^2+4)}{(2t-7)^2}$$

$$= \frac{2t^2-14t-4}{(2t-7)^2}$$

2) $h(x) = \underset{f(x)}{\frac{x}{\sqrt{x}+1}}$ $\underset{g(x)}{}$

$f(x) = x \quad g(x) = \sqrt{x}+1$

$f'(x) = 1 \quad g'(x) = \frac{1}{2}x^{-1/2}$

$$\frac{(\sqrt{x}+1)(1) - x'(\frac{1}{2}x^{-1/2})}{(\sqrt{x}+1)^2} = \frac{\sqrt{x}+1-\frac{x}{2\sqrt{x}}}{(\sqrt{x}+1)^2}$$