

4.1 Найми производные:

$$(x^2)' = 2x$$

$$\left(\frac{1}{x^2}\right)' = (x^{-2})' = (-2)x^{-2-1} = (-2)x^{-3} = -\frac{2}{x^3}$$

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

$$\left(\frac{1}{\sqrt{x}}\right)' = (x^{-\frac{1}{2}})' = \left(-\frac{1}{2}\right)x^{-\frac{1}{2}-1} = \left(-\frac{1}{2}\right)x^{-\frac{3}{2}} = -\frac{1}{2\sqrt{x^3}}$$

Ответ:

$(x^2)' = 2x$	$\left(\frac{1}{x^2}\right)' = -\frac{2}{x^3}$
$(\sqrt{x})' = \frac{1}{2\sqrt{x}}$	$\left(\frac{1}{\sqrt{x}}\right)' = -\frac{1}{2\sqrt{x^3}}$

4.2 Найми производные:

$$\begin{aligned}\left(\frac{1}{\sqrt{x+1}}\right)' &= ((x+1)^{-\frac{1}{2}})' = \left(-\frac{1}{2}\right)(x+1)^{-\frac{1}{2}-1}(x+1)' = \\ &= \left(-\frac{1}{2}\right)(x+1)^{-\frac{3}{2}}(x+1)' = \left(-\frac{1}{2}\right)(x+1)^{-\frac{3}{2}}(1+0) = \left(-\frac{1}{2}\right)(x+1)^{-\frac{3}{2}} = \\ &= -\frac{1}{2\sqrt{(x+1)^3}}\end{aligned}$$

$$\begin{aligned}\left(\frac{1}{\sqrt{\sin x}}\right)' &= (\sin x)^{-\frac{1}{2}}' = \left(-\frac{1}{2}\right)(\sin x)^{-\frac{1}{2}-1}(\sin x)' = \left(-\frac{1}{2}\right)\sin^{-\frac{3}{2}}x \cos x = \\ &= -\frac{\cos x}{2\sqrt{\sin^3 x}}\end{aligned}$$

Ответ:

$\left(\frac{1}{\sqrt{x+1}}\right)' = -\frac{1}{2\sqrt{(x+1)^3}}$	$\left(\frac{1}{\sqrt{\sin x}}\right)' = -\frac{\cos x}{2\sqrt{\sin^3 x}}$
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