

$$20) \quad s(t) = \frac{1}{t^2+3t-1} = (t^2+3t-1)^{-1}$$

$$s'(t) = \frac{0(t^2+3t-1) - 1(2t+3)}{(t^2+3t-1)^2} = \frac{-2t-3}{(t^2+3t-1)^2}$$

$$22) \quad y = \frac{-5}{(t+3)^3} \quad y' = \frac{0(t+3)^3 + 5[3(t+3)^2(1)]}{(t+3)^6}$$

$$\frac{-5(t+3)^{-3}}{15(t+3)^{-4}} = \frac{15(t+3)^2}{(t+3)^6} = \frac{15}{(t+3)^4}$$

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$$24) \quad g(t) = \sqrt{\frac{1}{t^2-2}} = \frac{1}{\sqrt{t^2-2}} = (t^2-2)^{-\frac{1}{2}}$$

$$= -\frac{1}{2}(t^2-2)^{-\frac{3}{2}}(2t)$$

$$28) \quad y = \frac{1}{2}x^2\sqrt{16-x^2}$$

$$= \frac{-t}{\sqrt{(t^2-2)^3}}$$

$$y' = x\sqrt{16-x^2} + \frac{1}{2}x^2 \frac{-2x}{2\sqrt{16-x^2}}$$

$$\frac{2x\sqrt{16-x^2}\sqrt{16-x^2}}{2\sqrt{16-x^2}} + \frac{-x^3}{2\sqrt{16-x^2}}$$

$$\frac{2x(16-x^2) - x^3}{2\sqrt{16-x^2}} = \frac{32x - 3x^3}{2\sqrt{16-x^2}}$$

$$(16-x^2)^{\frac{1}{2}}$$

$$\frac{1}{2}(16-x^2)^{-\frac{1}{2}}(2x)$$

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$$32) h(t) = \left( \frac{t^2}{t^3+2} \right)^2 = \frac{t^4}{(t^3+2)^2}$$

$$h'(t) = \frac{4t^3(t^3+2)^2 - t^4 [2(t^3+2)'(3t^2)]}{(t^3+2)^4}$$

$$= \frac{4t^3(t^3+2)^{\cancel{2}1} - 6t^6 \cancel{(t^3+2)}}{(t^3+2)^{\cancel{4}3}}$$

$$= \frac{4t^6 + 8t^3 - 6t^6}{(t^3+2)^3} = \frac{-2t^6 + 8t^3}{(t^3+2)^3} = \frac{-2t^3(t^3-4)}{(t^3+2)^3}$$

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