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#18 PRACTICE ON DIFFERENTIATION 3.6

Find the indicated derivative in each case. You should try to simplify your answers if you can. Try quotient rule on problems 1, 10, 17, and 18.

1. $f'(t)$ for $f(t)=\dfrac{t}{\sqrt{t^3+1}}$

2. $f'(x)$ for $f(x)=\dfrac{x^2+1}{x^3}$

3. $\dfrac{dz}{dx}$ for $z=(x+1)^3(5-x)^4$

4. $f'(m)$ for $f(m)=\dfrac{1}{\sec(2m)}$

5. $f''(x)$ for $f(x)=3x\cdot 2^{5x}$

6. $f'(\Gamma)$ for $f(\Gamma)=\dfrac{\beta\Gamma+\Gamma^6}{1-\beta}$

7. $\dfrac{dy}{dt}$ for $y=\ln(\ln(2t^3))$

8. $g'(x)$ for $g(x)=\left|x\cdot e^x\right|$

9. $x'(r)$ for $x(r)=\sqrt{3r}+3\sqrt{r}-\sqrt{\dfrac{3}{r}}+\sqrt{3}$

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10. $h'(y)$ for $h(y)=\dfrac{\ln y}{1-\ln y}$

11. $\dfrac{dz}{dm}$ for $z=\log(10^{2m})$

12. $f'(x)$ for $f(x)=\sinh(x^2+1)$

13. $f'(t)$ for $f(t)=\sin^{-1}\left(\dfrac{2}{t}\right)$

14. $g'(\theta)$ for $g(\theta)=\sqrt{3\theta+\tan^2(4\theta)}$

15. $f'(x)$ for $f(x)=x\cos\left(\sqrt[3]{x}+1\right)$

16. $\dfrac{dy}{du}$ for $y=(\cot 1+\cot u)^{\pi}$

17. $g'(z)$ for $g(z)=\dfrac{e^{az}}{a^2+z^2}$

18. $f'(x)$ for $f(x)=\dfrac{ax^2}{(2-x)^3}$

19. $a'(t)$ for $a(t)=\ln\left(\dfrac{1-\cos t}{1+\cos t}\right)^4$