Name_____ Date_____ Period_____

Worksheet 4.1B—Basic Differentiation Practice

Evaluate the following derivatives **without using the product, quotient or chain rules.** Many problems will involve rewriting, like expanding, factoring, splitting up terms in the numerator, trig identities, etc. Show all work, including rewrites and "clean ups." Use Proper notation. Remember to simplify early and often.

1. $\frac{d}{dx}x^4 =$

2. $\frac{d}{dx}\left(-3x^6\right) =$

3. $\frac{d}{dx}\left[4\left(x+2\right)\left(x+3\right)\right] =$

4. $\frac{d}{dx}\left[5x^5\right] =$

5. $\frac{d}{dr}\left(-2r\right)^3 =$

6. $\frac{d}{dx}\left[\left(x-2\right)^2\left(2x+1\right)\right] =$

7. $\frac{d}{dx}\left[12x^{3/2}\right] =$

8. $\frac{d}{dp}\left[3\left(2p^2\right)^3\right] =$

9. $\frac{d}{dx}\left(\frac{\left(4x-2\right)\left(6x+1\right)}{\sqrt[3]{x^2}}\right) =$

10. $\frac{d}{dx}\left[4x^2\left(x+1\right)^2\right] =$

11. $\frac{d}{dm}\left[\frac{2}{\left(3m\right)^2}\right] =$

12. $\frac{d}{dx}\left(x^3\sqrt{x}-\frac{4}{\sqrt{x}}\right) =$

13. $\frac{d}{dt}\left[\frac{4}{t^2}\right] =$

14. $\frac{d}{ds}\left[\frac{-1}{\left(-2s\right)^{-2}}\right] =$

15. $\frac{d}{dx}\left(-\frac{1}{3}\left(x^7-3x^2+2x\right)\right) =$

16. $\frac{d}{dx}\sqrt{x} =$

17. $\frac{d}{dx}\left(4x^2 - 3x^3\right) =$

18. $\frac{d}{dx}\left(x^{-3} + \frac{1}{x^7}\right) =$

19. $\frac{d}{ds}\left[\frac{2}{s\sqrt{s}}\right] =$

20. $\frac{d}{dx}\left(x\sqrt{x} - \frac{1}{\sqrt{x}} + \csc x\right) =$

21. $\frac{d}{dx}\left(\frac{2\sqrt{x}+1}{4\sqrt[3]{x}}\right) =$

22. $\frac{d}{dx}\left[\frac{-2x}{5\sqrt[3]{x^2}}\right] =$

23. $\frac{d}{dx}\left(\frac{-5x + 3x^2 \arctan x}{2x^2}\right) =$

24. $\frac{d}{dx}\left(\frac{x^2 + 2x + 1}{x+1}\right) =$

25. $\frac{d}{dx}\left[5x^{12}x^{-3}\right] =$

26. $\frac{d}{dx}\left(\frac{2x^3 - 3x^2 + 2x + 1}{x^2}\right) =$

27. $\frac{d}{dt}\left(\frac{3}{\sqrt[3]{8t}} + \frac{5}{\cos t}\right) =$

28. $\frac{d}{dx}\left[\frac{x\sec^{-1} x}{4x}\right] =$

29. $\frac{d}{dx}\left(\frac{4x^{77} - 3x\arcsin x}{x}\right) =$

30. $\frac{d}{dt}\left(4t^{1/2} - 2.5t^{-2}\right) =$

31. $\frac{d}{dx}\left[\cos^{-1} x\right] =$

32. $\frac{d}{dx}\left(3x^2 - 2\sec x + 4\tan x\right) =$

33. $\frac{d}{d\theta}\left[\frac{\sin\theta - \cos\theta + \cot\theta}{\cos\theta}\right] =$