

Name: _____

3.7 Chain Rule Worksheet #1

Find the derivatives of the following:

1. $(3x-5)^5$

2. $\sqrt{2x+5}$

3. $\sin(4x+5)$

4. $\sin^3 x$

5. $\ln(x^2+5)$

6. $\sqrt{\sin x}$

7. $(4x+5)^3$

8. $\sqrt{\ln x}$

9. $\ln(\sin x)$

10. $\sin^3(3x+5)$

11. $\sqrt{\sin(4x+2)}$

12. $\ln\sqrt{4x}$

13. $\frac{1}{\sin 2x}$

14. $\sin\sqrt{2x}$

15. $\ln(\ln x)$

16. $\sqrt[3]{\sin x}$

17. $\sin^4\sqrt{x}$

18. $(\ln x)^4$

19. $\sqrt[5]{\ln x}$

20. $\sqrt{\sin(\ln x)}$

Chain Rule Worksheet #1: Key

1. $15(3x-5)^4$

2. $\frac{1}{\sqrt{2x+5}}$

3. $4\cos(4x+5)$

4. $3\sin^2 x \cos x$

5. $\frac{2x}{x^2+5}$

6. $\frac{\cos x}{2\sqrt{\sin x}}$

7. $12(4x+5)^2$

8. $\frac{1}{2x\sqrt{\ln x}}$

9. $\frac{\cos x}{\sin x} = \cot x$

10. $9\sin^2(3x+5)\cos(3x+5)$

11. $\frac{2\cos(4x+2)}{\sqrt{\sin(4x+2)}}$

12. $\frac{1}{2x}$

13. $-\frac{2\cos(2x)}{\sin^2(2x)}$

14. $\frac{\cos\sqrt{2x}}{\sqrt{2x}}$

15. $\frac{1}{x\ln x}$

16. $\frac{\cos x}{3\sqrt[3]{\sin^2 x}}$

17. $\frac{2\sin^3\sqrt{x}\cos\sqrt{x}}{\sqrt{x}}$

18. $\frac{4(\ln x)^3}{x}$

19. $\frac{1}{5x(\ln x)^{4/5}}$

20. $\frac{\cos(\ln x)}{2x\sqrt{\sin(\ln x)}}$