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**HOMEWORK DAY 8** – *Derivatives of Trigonometric functions §2.4*

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*Find the following derivatives. Simplify if appropriate.  
Always write  $f'(x) = \dots$ . See worked-out example.*

1. §2.4: 2.

2. §2.4: 3.

3. §2.4: 5.

4. §2.4: 6.

5. §2.4: 7. *Answer* :  $\frac{dy}{d\theta} = \sec \theta \tan \theta \tan \theta + \sec \theta \sec^2 \theta = \sec \theta (\tan^2 \theta + \sec^2 \theta)$

6. §2.4: 8.

7. §2.4: 10.

8. §2.4: 40 (A point on a curve has two coordinates  $(a, b)$ )

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**HOMEWORK DAY 9** – *Chain Rule §2.5*

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9. §2.5: 7.

10. §2.5: 9.

11. §2.5: 10.

12. §2.5: 14.

13. §2.5: 15.

14. §2.5: 16.

15. §2.5: 18.

16. §2.5: 24.

17. Find  $\frac{d^{37}}{dx^{37}}(x \cos x)$

18. Let  $f(t) = (3t - 1)^4(2t + 1)^{-3}$ .

(a) Find  $f'(t)$ . Simplify your answer

(b) Find the points  $(a, b)$  on the curve  $y = f(t)$  at which the tangent line is horizontal.

19. Let  $f(x) = \frac{1}{4 + x^2}$

(a) Find  $f'(x)$  (simplify, compare with your answer from Day 5, Exercise 8)

(b) Find  $f''(x)$  (simplify)

(c) Find the points  $(a, b)$  on the curve  $y = f(x)$  at which  $f''(x) = 0$ .

20. §2.5: 66

21. §2.5: 68

22. §2.5: 72

23. §2.5: 78

24. §2.5: 81