

AP Calculus
WS 3.2

$$1. \frac{3(2x-3) - 2(3x-2)}{(2x-3)^2}$$

$$2. \frac{1(t^2+2t+2) - (2t+2)(t+1)}{(t^2+2t+2)^2}$$

$$3. 5 \csc x - 5x \cot^2 x$$

$$4. \frac{x^3 \sec^2 x - 3x^2 \tan x}{x^6}$$

$$5. 2x \sin x + x^2 \cos x + 2 \cos x - 2x \sin x$$

$$6. -\frac{\sin x}{5}$$

$$7. 0$$

$$8. -8$$

$$9. -10$$

$$10. 14$$

$$11. e^2 (\cos x - \sin x)$$

$$12. \sin x + x \cos x + e \sin x$$

$$13. \cos x \sin x - x \sin^2 x + x \cos^2 x$$

$$14. a. v(t) = 3t^2 - 6t - 24$$

$$a(t) = 6t - 6$$

$$b. t < 2 \text{ or } t > 4$$

$$c. t > 1$$

$$d. 21$$

$$15. f'(x) = 6x^{1/2}$$

$$* f''(x) = 3x^{-1/2}$$

$$16. f'(x) = 1 - 64x^{-3}$$

$$* f''(x) = 192x^{-4}$$

$$17. f'(x) = 3 \cos x$$

$$* f''(x) = -3 \sin x$$

$$18. f'(x) = \frac{1}{x^2 - 2x + 1}$$

$$* f''(x) = \frac{2x - 2}{(x^2 - 2x + 1)^2}$$

$$19. a) y = -\pi^3 (x - \pi)$$

$$b) y = \frac{1}{\pi^3} (x - \pi)$$

$$20. \left(\frac{1}{3}\right)^{3/5} = x = .517$$

$$21. (.343, 1.268)$$

$$(.934, 1.911)$$

$$22. y - 1.268 = 3.091(x - .343)$$

$$y - 1.911 = -1.177(x - .934)$$

AP Calculus

WS 3.5

$$1. f'(x) = 12x(x^2-1)^2$$

$$* f''(x) = 12[(x^2-1)^2 + 4x^2(x^2-1)]$$

$$2. f'(x) = 3 \sin^2 x \cos x$$

$$* f''(x) = 6 \sin x \cos^2 x - 3 \sin^3 x$$

$$3. 24$$

$$4. -2g'(3)$$

$$5. 4/3$$

$$6. 162$$

$$7. -54$$

$$8. \text{Change to } -\frac{\pi}{12} \text{ (x)}$$

$$-\frac{\pi}{12} h(x)$$

$$\text{and } f'(5) = -\frac{\pi}{2}$$

$$9. \sin^2 x + \cos^2 x = 1$$

$$\Rightarrow g(x) = 1$$

$$g'(x) = 0$$

$$g'(x) = 2 \sin x \cos x + 2 \cos x (-\sin x)$$

$$= 2 \sin x \cos x - 2 \cos x \sin x$$

$$= 0$$

$$10. f'(x) = 2 \sec x \cdot \sec x \tan x$$

$$g'(x) = 2 \tan x \cdot \sec^2 x$$

$$* 11. a) C'(x) = -60 + 2.4x$$

$$b) -12$$

$$c) 25$$

$$12. a) v(t) = 4t - 5$$

$$a(t) = 4$$

$$b) t > 5/4$$

always