

WS 1 on Chain Rule

$$1) f'(x) = 4x(x^2 + 3x)$$

$$2) f'(x) = \frac{2x+3}{2\sqrt{x^4+3x}}$$

$$3) f'(x) = \frac{-16x}{3(7-4x^2)^{4/3}}$$

$$4) y' = \frac{-5(2x-4)}{2\sqrt{2x^2-4x+1}}$$

$$5) y' = 6x(2x-3)^3(2x-1)$$

$$6) y' = \frac{4-2x^2}{\sqrt{4-2x^2}}$$

$$7) y' = \frac{20(2x-1)^4}{(2x+1)^6}$$

$$8) y' = \frac{-1}{(x^2-1)^{3/2}}$$

$$9) y' = \frac{1}{2}\sqrt{x+2}(5x-2)$$

$$10) y' = 165(3x+7)^4$$

$$11) y' = \frac{24}{(-2x+1)^5}$$

$$12) y' = \frac{-3(6x^2+1)}{(6x^2-1)^2}$$

$$13) y' = 2(2x+1)^4(3x^2+4x)^6(57x^2+69x+14)$$

$$14) y' = \frac{-3(42x^2+1)}{(6x^2-1)^5}$$

$$15) y' = -2x \sin(x^2)$$

$$16) y' = -2 \cos x \sin x$$

$$17) y' = 6x e^{(3x^2+7)}$$

$$18) y' = \frac{-1}{e^x}$$

$$19) y' = 2e^{2x}$$

$$20) y' = 2e^{2x}$$

$$21) y' = (\sin x + x \cos x) e^{x \sin x}$$

$$22) y' = 2 \sec(2x+4) \tan(2x+4)$$

$$23) y' = 8 \sec^2(2x+4) \tan(2x+4)$$

$$24) y' = -(2x+5) \sin(x^2+5x)$$

$$25) y' = 6 \sin(3x+2) \cos(3x+2)$$

$$26) y' = \frac{3 \tan^2 \sqrt{x} \sec^2 \sqrt{x}}{2\sqrt{x}}$$

$$27) y' = 2 \sin 4x + 4(2x-7) \cos 4x$$

$$28) y' = \frac{\cot\left(\frac{x}{2}\right) - \left(\frac{x}{2}\right) \csc^2\left(\frac{x}{2}\right)}{2\sqrt{x \cot\left(\frac{x}{2}\right)}}$$

$$29) y' = -60 \cos^2(4x) \sin(4x) (1 + \cos^3(4x))^4$$

$$30) y' = -2(1-x^3)(x^2+2x-6)(5x^4+8x^3-18x^2-2x-2)$$