

HW 242

Trig and the Chain Rule

Name _____ Pd _____

$$y = \cos(4x + 1)$$

$$y = \frac{1}{4} \sin^2(2x)$$

47. $y = \cos 3x$

49. $g(x) = 3 \tan 4x$

51. $y = [\sin(\pi x)]^2$

53. $h(x) = \sin 2x \cos 2x$

55. $f(x) = \frac{\cot x}{\sin x}$

57. $y = 4 \sec^2 x$

59. $f(\theta) = \frac{1}{4} \sin^2 2\theta$

61. $f(t) = 3 \sec^2(\pi t - 1)$

63. $y = \sqrt{x} + \frac{1}{4} [\sin(2x)]^2$

65. $y = \sin(\cos x)$

$$4. y = 3 \tan(\pi x^2)$$

$$5. y = \csc^3 x$$

$$6. y = \cos \frac{3x}{2}$$

$$48. y = \sin \pi x$$

$$50. h(x) = \sec(x^2)$$

$$52. y = [\cos(1 - 2x)]^2$$

$$54. g(\theta) = \sec\left(\frac{1}{2}\theta\right) \tan\left(\frac{1}{2}\theta\right)$$

$$56. g(v) = \frac{\cos v}{\csc v}$$

$$58. y = 2 \tan^3 x$$

$$60. g(t) = 5 \cos^2 \pi t$$

$$62. h(t) = 2 \cot^2(\pi t + 2)$$

$$64. y = 3x - 5[\cos(\pi x)]^2$$

$$66. y = \sin \sqrt[3]{x} + \sqrt[3]{\sin x}$$

$$47. y = \cos 3x \quad y' = -\sin(3x)(3)$$

$$49. g(x) = 3 \tan 4x \quad 3 \sec^2(4x)(4)$$

$$51. y = \sin(\pi x)^2 \quad \cancel{2 \sin(\pi x) \cos(\pi x) \pi} \quad y' = 2 \sin(\pi x) \cos(\pi x) \pi$$

$$53. h(x) = \sin 2x \cos 2x \quad \cos(2x)(2) \cos(2x) + \sin(2x)(-\sin(2x)(2))$$

$$55. f(x) = \frac{\cot x}{\sin x} \quad f'(x) = \frac{\sin x(-\csc^2 x) - \cot x \cos x}{\sin^2 x}$$

$$57. y = 4 \sec^2 x \quad 4(\sec x)^2 \rightarrow 8(\sec x)' \sec x \tan x$$

$$59. f(\theta) = \frac{1}{4} \sin^2 2\theta \quad f'(\theta) = \frac{1}{4}(2) \sin(2\theta) \cos(2\theta)(2)$$

$$61. f(t) = 3 \sec^2(\pi t - 1) \quad 3[\sec(\pi t - 1)]^2 \rightarrow 6[\sec(\pi t - 1)]' \sec(\pi t - 1) \tan(\pi t - 1) \pi$$

$$63. y = \sqrt{x} + \frac{1}{4} \sin(2x)^2 \quad y' = \frac{1}{2} x^{-1/2} + \frac{1}{4}(2) \sin(2x) \cos(2x)(2)$$

$$65. y = \sin(\cos x) \quad \cos(\cos x)(-\sin x)$$

$$48. y = \sin \pi x \quad y' = -\cos(\pi x)(\pi)$$

$$50. h(x) = \sec x^2 \quad \sec(x^2) \tan(x^2)(2x)$$

$$52. y = \cos(1 - 2x)^2 \quad \cancel{2 \cos(1-2x) (-\sin(1-2x)) (-2)} \quad y' = 2 \cos(1-2x) (-\sin(1-2x)) (-2)$$

$$54. g(\theta) = \sec(\frac{1}{2}\theta) \tan(\frac{1}{2}\theta) \quad \frac{1}{2} \sec(\frac{1}{2}\theta) \tan(\frac{1}{2}\theta) \tan(\frac{1}{2}\theta) + \frac{1}{2} \sec(\frac{1}{2}\theta) \sec^2(\frac{1}{2}\theta)$$

$$56. g(v) = \frac{\cos v}{\csc v} \quad g'(v) = \frac{\csc v (-\sin v) - \cos v (-\csc v \cot v)}{\csc^2 v}$$

$$58. y = 2 \tan^3 x \quad 2[\tan x]^3 \rightarrow 6[\tan x]^2 \sec^2 x$$

$$60. g(t) = 5 \cos^2 \pi t \quad g'(t) = 10 \cos(\pi t) (-\sin(\pi t)) (\pi)$$

$$62. h(t) = 2 \cot^2(\pi t + 2) \quad 2[\cot(\pi t + 2)]^2 \rightarrow 4[\cot(\pi t + 2)]' (-\csc^2(\pi t + 2)) (\pi)$$

$$64. y = 3x - 5 \cos(\pi x)^2 \quad y' = 3 - 10 \cos(\pi x) (-\sin(\pi x)) (\pi)$$

$$66. y = \sin \sqrt[3]{x} + \sqrt[3]{\sin x} \quad \cos(x^{1/3}) (\frac{1}{3} x^{-2/3}) + \frac{1}{3} (\sin x)^{-2/3} (\cos x)$$