

Practice Assignment 4

Derivatives with Trigonometric Functions

In this fourth practice assignment, you will review topics from section 8.4

Try all problems for practice.

If you have difficulties, ask for help in class or in the instructor's office; all answers are shown in another file.

- (1) Find $y'(0)$ if $y = (x + 1)^{2 \cos x}$
- (2) Find $y'(\pi)$ if $y = (5x - 2) \cos 5x$
- (3) Find $y'(\frac{\pi}{8})$ if $y = 6x - \frac{5x}{\sin 4x}$
- (4) Find $y'(\frac{\pi}{4})$ if $y = x^2 \sin 2x - 4x$
- (5) Find $y'(\frac{\pi}{2})$ if $y = \frac{3x - 1}{\sin 3x}$
- (6) Find $y'(\pi)$ if $y = (2 + \sin 2x)(\sec 2x + 4)$
- (7) Find $y'(0)$ if $y = \frac{\sin x + x^2}{4x - \cos x}$
- (8) Find $y'(3)$ if $y = 12x^2 + \cos(3 - x)$
- (9) Find $y'(3)$ if $y = \sin(3x - x^2)^2$
- (10) Find $y'(\pi)$ if $y = \sqrt[3]{\sin 3x + \cos 3x + 2}$
- (11) Find $y'(1, 3)$ if $\cos(3x - y) + 4y + 2x = 15$
- (12) Find $y'(\pi, 0)$ if $y \cos x + x^2 \cos y = \pi^2$
- (13) Find $y'(2, \frac{\pi}{2})$ if $y = 4 \cos y + 3x = 6$
- (14) Find $y'(2, \pi)$ if $\cos(\frac{y}{x}) + x^2 = 4$
- (15) Find $y'(1, 0)$ if $\sec(xy^2) - y + 6x = 6$
- (16) Find $y'(1, \frac{1}{3})$ if $\sin(3y - x) + 2 \cos(3y - 1) = 3$
- (17) Find $y'(1, 4)$ if $\tan(4x - y) + 2y = 8$
- (18) Find $y'(0, \frac{\pi}{2})$ if $\frac{3 \cos x - 1}{1 + \cos y} = 2 + 3x$
- (19) Find $y'(3)$ if $y = \sin^2(6 - 2x) + x^3$
- (20) Find $y^{(4)}(3)$ if $y = \cos(9 - 3x)$
- (21) Find $y^{(3)}(\frac{3\pi}{2})$ if $y = \cos(\frac{x}{3})$
- (22) Find $y'(-1)$ if $y = \sin(\frac{x+1}{2x})$
- (23) Find $y'(0)$ if $y = e^{2x} \sin 3x$
- (24) Find $y'(0)$ if $y = e^{4 \sin x + x^2}$
- (25) Find $y'(0)$ if $y = \tan(e^{3x} - 1)$
- (26) Find $y'(-3)$ if $y = e^{x+3} \sin(\pi x)$
- (27) Find $y'(0)$ if $y = \frac{\sin 4x}{e^{3x}}$
- (28) Find $y'(3)$ if $y = e^{\sin(2x-6)}$
- (29) Find $y'(0, 2\pi)$ if $3 \tan y - e^{2x} + 1 = 0$
- (30) Find $y'(0, 2\pi)$ if $4 \tan 3y - e^{4x} + 1 = 0$
- (31) Find $y'(0)$ if $y = \ln(2x + \cos x)$
- (32) Find $y'(1)$ if $y = \sin(\ln x + \pi x)$
- (33) Find $y'(0)$ if $y = \frac{\cos x}{\ln(2x + 1) + 3}$
- (34) Find $y'(0)$ if $y = \ln(4 \sin x + e^{3x})$
- (35) Find $y'(3)$ if $y = (4x + 3)^{\tan(3-x)}$
- (36) Find $y'(0, 0)$ if $\ln(2 \tan x + 1) = \sin 3y$
- (37) Find $y''(0)$ if $y = \ln(\cos 3x)$
- (38) Find $y''(\frac{\pi}{2})$ if $y = \ln(\sin^3 x)$

- (39) Use logarithmic differentiation to find $y'(0)$ if $y = \frac{\sqrt[3]{3x+1} e^{\sin 2x}}{(x^3+1)^3}$
- (40) Use logarithmic differentiation to find $y'(0)$ if $y = \frac{\cos 2x \sqrt{4x+1}}{e^{\sin 3x}}$
- (41) Find $y'(\frac{\pi}{4})$ if $y = (\tan x)^{2x}$
- (42) Find $y'(\frac{\pi}{4})$ if $y = (4-3x) \cot 3x$
- (43) Find $y'(\frac{\pi}{2})$ if $y = 5x - \frac{4x}{\sec 2x}$
- (44) Find $y'(\frac{\pi}{4})$ if $y = 3x \cos 2x - 2x^2$
- (45) Find $y'(\pi)$ if $y = \frac{5x-3}{\cos 4x}$
- (46) Find $y'(\pi)$ if $y = (3 - \cos 3x)(\tan 3x + 6)$
- (47) Find $y'(0)$ if $y = \frac{3x - \sin x}{x^2 + \cos x}$
- (48) Find $y'(1)$ if $y = 5x^2 - \sin(1-x)$
- (49) Find $y'(2)$ if $y = \cos(x^3 - 4x)^2$
- (50) Find $y'(\pi)$ if $y = \sqrt[4]{2 \cos 2x - \sin 2x - 1}$
- (51) Find $y'(2,1)$ if $\sin(2y-x) + 3y^2 = x+1$
- (52) Find $y'(0,\pi)$ if $y^2 \cos y + x \cos y + \pi^2 = 0$
- (53) Find $y'(1,0)$ if $6 \sin y - 2x + 2 = 0$
- (54) Find $y'(0,2)$ if $\sin(xy) + y^2 = 4$
- (55) Find $y'(1, \frac{\pi}{2})$ if $\csc(3y) + \cos y - x^2 + 2 = 0$
- (56) Find $y'(2,1)$ if $\sec(2y-x) + 3y = 3x^2 + 1$
- (57) Find $y'(2,1)$ if $\sec(2y-x) + 3y = 3x^2 + 1$
- (58) Find $y'(\frac{\pi}{2}, 0)$ if $\frac{\sin x + 3}{3 \cos y + 1} - 4y = \cos x + 1$
- (59) Find $y'(5)$ if $y = \cos^2(15-3x) - 3x^2$
- (60) Find $y^{(3)}(-4)$ if $y = \sin(8+2x)$
- (61) Find $y^{(3)}(6\pi)$ if $y = \sin(\frac{x}{2})$
- (62) Find $y'(0)$ if $y = \tan(\frac{3x}{x-2})$
- (63) Find $y'(0)$ if $y = e^{-x} \cos 2x$
- (64) Find $y'(0)$ if $y = e^{\sin x + x}$
- (65) Find $y'(0)$ if $y = \sin(1 - e^{2x})$
- (66) Find $y'(-2)$ if $y = e^{2x+4} \tan(\pi x)$
- (67) Find $y'(0)$ if $y = \frac{\tan 2x}{e^{3x}}$
- (68) Find $y'(2)$ if $y = e^{-\tan(2-x)}$
- (69) Find $y'(0,0)$ if $4 \tan y + e^{4x} = 1$
- (70) Find $y'(\pi, 0)$ if $5 \sin x - e^{3y} + 1 = 0$
- (71) Find $y'(0)$ if $y = \ln(3x + \sec x)$
- (72) Find $y'(1)$ if $y = \tan(\pi x^2 - \ln x)$
- (73) Find $y'(0)$ if $y = \frac{\sin x}{4 - \ln(3x+1)}$
- (74) Find $y'(0)$ if $y = \ln(3 \tan x + e^{5x})$
- (75) Find $y'(4)$ if $y = (4+x)^{\sin(4-x)}$
- (76) Find $y'(0,0)$ if $\ln(3 \sin x + 1) = \tan 2y$
- (77) Find $y''(\frac{\pi}{10})$ if $y = \ln(\sin 5x)$
- (78) Find $y''(0)$ if $y = \ln(\cos^2 2x)$

(79) Use logarithmic differentiation to find $y'(0)$ if $y = \frac{(6x+1)^2 \sqrt[4]{2x^2+1}}{e^{1-\cos x}}$

(80) Use logarithmic differentiation to find $y'(0)$ if $y = \frac{\sin 4x e^{3 \sin x}}{\sqrt[3]{9x+1}}$

(81) Use logarithmic differentiation to find $y'(0)$ if $y = \frac{\sqrt{\sin 3x+1}}{\cos^2 x \sqrt[3]{x^2+1}}$

(82) Use logarithmic differentiation to find $y'(0)$ if $y = \frac{(x+2) \sqrt{\cos^3 x}}{(3x + \cos 2x)^4}$

(83) Use logarithmic differentiation to find $y'(\pi)$ if $y = \frac{(\sin 3x - \cos 2x)^4}{2 \sec x (\tan x + 2)^2}$

(84) Find $y'(0)$ if $y = \ln \left[\frac{(x^3+1)^2 (\tan x+2)^3}{\sqrt{\cos x+2}} \right]$

(85) Find $y'(0)$ if $y = \ln \left[\frac{\sqrt[3]{2x - \cos x}}{(\sin x + 4)^3 \sqrt{x+1}} \right]$

(86) Find $y'(1)$ if $y = \ln \left[\frac{\cos^2(x^2-1)}{\sqrt{x+3} (x^2+1)^3} \right]$

(87) Find $y'(0,2)$ if $\sin\left(\frac{x}{y}\right) + \cos(xy) + 2y^3 = 17$

(88) Find $y'(0,1)$ if $\sin(\ln y) - \tan(xy) + 3x = 0$

(89) Find $y'(4,0)$ if $e^{\sin(y)} - \cos\left(\frac{y}{x}\right) + 4x = 3$

(90) Find $y'(0,0)$ if $e^{y-\sin x} + \frac{\cos y}{4x+1} + 3y = 2$

(91) Find $y''(0)$ if $y = 3x \sin(2x)$

(92) Find $y''(1)$ if $y = \sin(2 \ln x)$

(93) Find $y''(0)$ if $y = (2x-1) \cos(3x)$

(94) Find $y''(0)$ if $y = \frac{\sin x + 3}{\sin x + 4}$

(95) Find $y''(0)$ if $y = e^{\cos(2x)-1}$

(96) Find $y'(0)$ if $y = (\sin 3x)^{\frac{1}{x+1}}$

(97) Find $y'(0)$ if $y = (x^2+2)^{\tan x}$

(98) Find $y'(0)$ if $y = (\tan 2x + 3)^{\cos x}$

(99) Find $y'(0)$ if $y = (\sin 3x + \cos x)^{\sqrt{x+1}}$

(100) Find $y'(0)$ if $y = \left(\ln(\cos x) + 4 \right)^{\tan 2x}$