

Calculus: Homework #10 Solutions

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Page 183, #1-12:

$$\#1: f' = 7x^6, \quad f = x^7 + C$$

$$\#2: f' = 10x^9, \quad f = x^{10} + C$$

$$\#3: f' = x^{-9}, \quad f = -1/8 x^{-8} + C$$

$$\#4: f' = x^{-1066}, \quad f = -1/1065 x^{-1065} + C$$

$$\#5: f' = \cos x, \quad f = \sin x + C$$

$$\#6: f' = \sin x, \quad f = -\cos x + C$$

$$\#7: f' = \csc^2 x, \quad f = -\cot x + C$$

$$\#8: f' = \sec x \tan x, \quad f = \sec x + C$$

$$\#9: f' = -\csc x \cot x, \quad f = \csc x + C$$

$$\#10: f' = \sec^2 x, \quad f = \tan x + C$$

$$\#11: f' = \sin 5x, \quad f = -1/5 \cos 5x + C$$

$$\#12: f' = \cos 4x, \quad f = 1/4 \sin 4x + C$$

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$$\#7: y = 7x^3, \quad dy = 21x^2 dx$$

$$\#8: y = -4x^{11}, \quad dy = -44 x^{10} dx$$

$$\#9: y = (x^4 + 1)^7, \quad dy = 7(x^4 + 1)^6 \cdot 4x^3 dx$$

$$\#10: y = (5 - 8x)^4, \quad dy = -32(5 - 8x)^3 dx$$

$$\#11: y = 3x^2 + 5x + 9, \quad dy = (6x + 5) dx$$

$$\#12: y = x^2 + x + 9, \quad dy = (2x + 1) dx$$

$$\#13: y = -5x^{-1.7}, \quad dy = 8.5 x^{-2.7} dx$$

$$\#14: y = 15x^{1/3}, \quad dy = 5x^{-2/3} dx$$

$$\#15: y = \sin 3x, \quad dy = 3 \cos 3x dx$$

$$\#16: y = \cos 4x, \quad dy = -4 \sin 4x dx$$

$$\#17: y = \tan^3 x, \quad dy = 3 \tan^2 x \cdot \sec^2 x dx$$

$$\#18: y = \sec^3 x, \quad dy = 3 \sec^2 x \cdot \sec x \tan x dx$$

$$\#19: y = 4x \cos x, \quad dy = (5 \cos x - 4x \sin x) dx$$

$$\#20: y = 3x \sin x, \quad dy = (3 \sin x + 3x \cos x) dx$$

$$\#21: y = x^2/2 - x/4 + 2, \quad dy = (x - 1/4) dx$$

$$\#22: y = x^3/3 - x/6 + 6, \quad dy = (x^2 - 1/6) dx$$

$$\#23: y = \cos(\sec x), \quad dy = -\sin(\sec x) \cdot \sec x \tan x dx$$

$$\#24: y = \sin(\csc x), \quad dy = -\cos(\csc x) \cdot \csc x \cot x dx$$

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$$\#1: \int 6x^5 dx = x^6 + C$$

$$\#2: \int 5x^4 dx = x^5 + C$$

$$\#3: \int x^{10} dx = 1/11 x^{11} + C$$

$$\#4: \int x^{20} dx = 1/21 x^{21} + C$$

$$\#5: \int 4x^{-6} dx = -4/5 x^{-5} + C$$

$$\#6: \int 9x^{-7} dx = -9/8 x^{-8} + C$$

$$\#7: \int 102t^{4.1} dt = 102/5.1 t^{5.1} + C$$

$$\#8: \int 72r^{-1.1} dr = -72/0.1 r^{-0.1} + C$$

$$\#9: \int 30 p^{-2/5} dp = 50 p^{3/5} + C$$

$$\#10: \int 56 v^{-3/7} dv = 56(7/4)v^{4/7} + C$$

$$\#11: \int \cos x \, dx = \sin x + C$$

$$\#12: \int \sin x \, dx = -\cos x + C$$

$$\#13: \int \sin 3m \, dm = -1/3 \cos 3m + C$$

$$\#14: \int \cos 5u \, du = 1/5 \sin 5u + C$$

$$\#15: \int 4 \cos 7x \, dx = 4/7 \sin 7x + C$$

$$\#16: \int 20 \sin 9x \, dx = -20/9 \cos 9x + C$$

$$\#17: \int (4v + 9)^2 \, dv = 1/12 (4v + 9)^3 + C$$

$$\#18: \int (3p + 17)^5 \, dp = 1/18 (3p + 17)^6 + C$$

$$\#19: \int (8 - 5x)^3 \, dx = -1/20 (8 - 5x)^4 + C$$

$$\#20: \int (20 - x)^4 \, dx = -1/5 (20 - x)^5 + C$$