100 Derivatives

Great for calc 1 and calc 2 students

Video: https://youtu.be/AegzQ_dip8k

July 20th, 2019

(Q1.) $\frac{d}{dx}\left(ax^2+bx+c\right)$

(A) $2ax+b$ (B) $2ax+b+c$ (C) $2a+b+c$

(Q2.) $\frac{d}{dx}\left(\frac{\sin x}{1+\cos x}\right)$

(A) $\frac{\cos x}{(1+\cos x)^2}$ (B) $\frac{1}{1+\cos x}$ (C) $\frac{\sin x}{(1+\cos x)^2}$

(Q3.) $\frac{d}{dx}\left(\frac{1+\cos x}{\sin x}\right)$

(A) $-\csc x\cot x+\sec^2 x$ (B) $\cos x+\cot x$ (C) $-\csc x\cot x-\csc^2 x$

(Q4.) $\frac{d}{dx}\left(\sqrt{3x+1}\right)$

(A) $\frac{3}{2\sqrt{3x+1}}$ (B) $\frac{1}{2\sqrt{3x+1}}$ (C) $\frac{3}{\sqrt{3x+1}}$

(Q5.) $\frac{d}{dx}\left(\sin^3(x)+\sin\left(x^3\right)\right)$

(A) $3\sin^2 x+\cos(x^3)$ (B) $3\sin^2 x\cos x+3x^2\cos(x^3)$ (C) $3\sin^2 x+\cos(3x^2)$

(Q6.) $\frac{d}{dx}\left(\frac{1}{x^4}\right)$

(A) $\frac{-4}{x^8}$ (B) $\frac{1}{4x^3}$ (C) $\frac{-4}{x^5}$

(Q7.) $\frac{d}{dx}\left((1+\cot x)^3\right)$

(A) $-3\csc^2 x(1+\cot x)^2$ (B) $-3\csc^2 x(1-\csc^2 x)^2$ (C) $3(1-\csc^2 x)^2$

(Q8.) $\frac{d}{dx}\left(x^2\left(2x^3+1\right)^{10}\right)$

(A) $2x(2x^3+1)^9(2x^3+5x+1)$ (B) $2x(2x^3+1)^9(32x^3+1)$ (C) $120x^3(2x^3+1)^9$

(Q9.) $\frac{d}{dx}\left(\frac{x}{(x^2+1)^2}\right)$

(A) $\frac{2x+3}{(x^2+1)^4}$ (B) $\frac{1}{2(x+1)}$ (C) $\frac{-3x^2+1}{(x^2+1)^3}$

(Q10.) $\frac{d}{dx}\left(\frac{20}{1+5e^{-2x}}\right)$

(A) $\frac{200e^{-2x}}{\left(1+5e^{-2x}\right)^2}$ (B) $\frac{200}{1+5e^{-2x}}$ (C) $\frac{20e^{-2x}}{\left(1+5e^{-2x}\right)^2}$

(Q11.) $\frac{d}{dx}\left(\sqrt{e^x}+e^{\sqrt{x}}\right)$

(A) $\sqrt{e^x}+\sqrt{x}e^{\sqrt{x}}$ (B) $\frac{\sqrt{e^x}}{2}+\frac{e^{\sqrt{x}}}{2\sqrt{x}}$ (C) $\frac{1}{2\sqrt{e^x}}+\frac{e^{\sqrt{x}}}{2\sqrt{x}}$

(Q12.) $\frac{d}{dx}\left(\sec^3(2x)\right)$

(A) $\sec^3(2x)\tan^2(2x)$ (B) $3\sec^2(2x)\tan(2x)$ (C) $6\sec^3(2x)\tan(2x)$

(Q13.) $\frac{d}{dx}\left(\frac{1}{2}\sec x\tan x+\frac{1}{2}\ln(\sec x+\tan x)\right)$

(A) $\sec^3 x$ (B) $2\sec^2 x\tan x$ (C) $3\sec^3 x\tan x$

(Q14.) $\frac{d}{dx}\left(\frac{xe^x}{1+e^x}\right)$

(A) $\frac{xe^x+e^x-e^{2x}}{(1+e^x)^2}$ (B) $\frac{xe^x+e^x+e^{2x}}{(1+e^x)^2}$ (C) $\frac{xe^x+e^x}{(1+e^x)^2}$

(Q15.) $\frac{d}{dx}\left(e^{4x}\cos(\frac{x}{2})\right)$

(A) $-2e^{4x}\sin(\frac{x}{2})$ (B) $-e^{4x}\sin(\frac{x}{2})+e^{4x}\cos(\frac{x}{2})$ (C) $\frac{-1}{2}e^{4x}\sin(\frac{x}{2})+4e^{4x}\cos(\frac{x}{2})$

(Q16.) $\frac{d}{dx}\left(\frac{1}{\sqrt[4]{x^3-2}}\right)$

(A) $\frac{-3x^2}{4\sqrt[4]{(x^3-2)^5}}$ (B) $\frac{-4}{\sqrt[4]{(x^3-2)^5}}$ (C) $\frac{3x^2}{4\sqrt[5]{(x^3-2)^4}}$

(Q17.) $\frac{d}{dx}\left(\tan^{-1}\left(\sqrt{x^2-1}\right)\right)$

(A) $\frac{-1}{\sqrt{(x^2-1)^3}}$ (B) $\frac{1}{x\sqrt{x^2-1}}$ (C) $\frac{1}{x^2\sqrt{x^2-1}}$

(Q18.) $\frac{d}{dx}\left(\frac{\ln x}{x^3}\right)$

(A) $\frac{3x^2-\ln x}{x^6}$ (B) $\frac{1}{3x^3}$ (C) $\frac{1-3\ln x}{x^4}$

(Q19.) $\frac{d}{dx}\left(x^x\right)$

(A) $x^x(\ln x+1)$ (B) $x^x(\ln x-1)$ (C) $x^x(\ln x-x)$

(Q20.) Find $\frac{dy}{dx}$ for $x^3+y^3=6xy$

(A) $\frac{x^2}{2x-y^2}$ (B) $\frac{x^2-2y}{2x-y^2}$ (C) $\frac{x^2+y^2}{2x+2y}$

(Q21.) Find $\frac{dy}{dx}$ for $y\sin y=x\sin x$

(A) $\frac{x\cos x}{y\cos y}$ (B) $\frac{\sin x-x\cos x}{\sin y-y\cos y}$ (C) $\frac{\sin x+x\cos x}{\sin y+y\cos y}$

(Q22.) Find $\frac{dy}{dx}$ for $\ln\left(\frac{x}{y}\right)=e^{xy^3}$

(A) $\frac{y-xy^4e^{xy^3}}{x+3x^2y^3e^{xy^3}}$ (B) $\frac{y-x^2y^3e^{xy^3}}{x+3x^2y^3e^{xy^3}}$ (C) $\frac{y+2x^2y^3e^{xy^3}}{x-3x^2y^3e^{xy^3}}$

(Q23.) Find $\frac{dy}{dx}$ for $x=\sec y$

(A) $\frac{1}{x\sin x}$ (B) $\frac{1}{x\sqrt{x^2-1}}$ (C) $\frac{1}{\sqrt{x^2-1}}$

(Q24.) Find $\frac{dy}{dx}$ for $(x-y)^2=\sin(x)+\sin(y)$

(A) $\frac{\cos x+\cos y}{2(x-y)}$ (B) $\frac{2x-2y+\cos x}{2x-2y-\cos y}$ (C) $\frac{2x-2y-\cos x}{2x-2y+\cos y}$

(Q25.) Find $\frac{dy}{dx}$ for $x^y=y^x$

(A) $\frac{xy\ln y-y^2}{xy\ln x-x^2}$ (B) $\frac{xy\ln y-2y}{xy\ln x-2x}$ (C) $\frac{xy\ln y+y^2}{xy\ln x+x^2}$

(Q26.) Find $\frac{dy}{dx}$ for $\tan^{-1}(x^2y)=x+y^3$

(A) $\frac{2xy+1-x^4y^2}{3y^2+3x^4y^2-2xy}$ (B) $\frac{2xy-1-x^4y^2}{3y^2+3x^4y^4-x^2}$ (C) $\frac{3xy-1+x^4y^2}{2y^2-3x^4y^4+x^2}$

(Q27.) Find $\frac{dy}{dx}$ for $\frac{x^2}{x^2-y^2}=3y$

(A) $\frac{-2xy}{3(x^2-y^2)^2}$ (B) $\frac{2x}{2x-2y}$ (C) $\frac{2x-6xy}{3x^2-9y^2}$

(Q28.) Find $\frac{dy}{dx}$ for $e^{\frac{x}{y}}=x+y^2$

(A) $\frac{ye^{\frac{x}{y}}-y^2}{xe^{\frac{x}{y}}+2y^3}$ (B) $\frac{ye^{\frac{x}{y}}-3y^2}{xe^{\frac{x}{y}}+2y^3}$ (C) $\frac{xe^{\frac{x}{y}}-3y^2}{ye^{\frac{x}{y}}+2y^3}$

(Q29.) Find $\frac{dy}{dx}$ for $(x^2+y^2-1)^3=y$

(A) $\frac{3x^2(x^2+y^2-1)^2}{1-3y^2(x^2+y^2-1)^2}$ (B) $\frac{6x(x^2+y^2-1)^2}{1-6y(x^2+y^2-1)^2}$ (C) $\frac{1+6x(x^2+y^2-1)^2}{1-6y(x^2+y^2-1)^2}$

(Q30.) Find $\frac{d^2y}{dx^2}$ for $9x^2+y^2=9$

(A) $\frac{81x^2-2xy}{y^4}$ (B) $\frac{18x+2y}{y^3}$ (C) $\frac{-81}{y^3}$

(Q31.) $\frac{d^2}{dx^2}\left(\frac{1}{9}\sec(3x)\right)$

(A) $\sec^3(3x)+\sec(3x)\tan^2(3x)$ (B) $\sec^3(3x)+3\tan^3(3x)$ (C) $\frac{1}{9}\sec(3x)+\tan^3(3x)$

(Q32.) $\frac{d^2}{dx^2}\left(\frac{x+1}{\sqrt{x}}\right)$

(A) $\frac{3-2x}{4x^{\frac{5}{2}}}$ (B) $\frac{3-x}{4x^{\frac{5}{2}}}$ (C) $\frac{3+x}{4x^{\frac{5}{2}}}$

(Q33.) $\frac{d^2}{dx^2}\left(\sin^{-1}\left(x^2\right)\right)$

(A) $\frac{2-4x^4}{\sqrt{(1-x^4)^3}}$ (B) $\frac{2-2x^4}{\sqrt{(1-x^4)^3}}$ (C) $\frac{2+2x^4}{\sqrt{(1-x^4)^3}}$

(Q34.) $\frac{d^2}{dx^2}\left(\frac{1}{1+\cos x}\right)$

(A) $\frac{\cos x+\cos^2 x+2\sin^2 x}{(1+\cos x)^3}$ (B) $\frac{\cos x+\cos^2 x-2\sin^2 x}{(1+\cos x)^3}$ (C) $\frac{1+\cos x+2\sin^2 x}{(1+\cos x)^3}$

(Q35.) $\frac{d^2}{dx^2}\left(x\tan^{-1}x\right)$

(A) $\frac{2\tan^{-1}x}{x^2+1}$ (B) $\frac{2}{(x^2+1)^2}$ (C) $\frac{-2\tan^{-1}x}{(x^2+1)^2}$

(Q36.) $\frac{d^2}{dx^2}\left(x^4\ln(x)\right)$

(A) $7x^2+12x^3\ln x$ (B) $7x+12x^2\ln x$ (C) $7x^2+12x^2\ln x$

(Q37.) $\frac{d^2}{dx^2}\left(e^{-x^2}\right)$

(A) $(4x^2-2)e^{-x^2}$ (B) $-2e^{-x^2}$ (C) $(6x^2-2x)e^{-x^2}$

(Q38.) $\frac{d^2}{dx^2}(\cos(\ln x))$

(A) $\frac{\sin(\ln x)+\cos(\ln x)}{x^2}$ (B) $\frac{\sin(\ln x)-\cos(\ln x)}{x^2}$ (C) $\frac{\sin(\frac{1}{x})-\cos(\frac{1}{x})}{x^2}$

(Q39.) $\frac{d^2}{dx^2}(\ln(\cos x))$

(A) $\csc x\sec x$ (B) $\sec x\tan x$ (C) $-\sec^2 x$

(Q40.) $\frac{d}{dx}\left(\sqrt{1-x^2}+x\sin^{-1}x\right)$

(A) $\sin^{-1}x$ (B) $\frac{1+x}{2\sqrt{1-x^2}}$ (C) $\cos^{-1}x$

(Q41.) $\frac{d}{dx}\left(x\sqrt{4-x^2}\right)$

(A) $\frac{8-4x^2}{\sqrt{4-x^2}}$ (B) $\frac{4-2x^2}{\sqrt{4-x^2}}$ (C) $\frac{8+x-x^2}{2\sqrt{4-x^2}}$

(Q42.) $\frac{d}{dx}\left(\frac{\sqrt{x^2-1}}{x}\right)$

(A) $\frac{-1}{\sqrt{(x^2-1)^3}}$ (B) $\frac{1}{x\sqrt{x^2-1}}$ (C) $\frac{1}{x^2\sqrt{x^2-1}}$

(Q43.) $\frac{d}{dx}\left(\frac{x}{\sqrt{x^2-1}}\right)$

(A) $\frac{-1}{\sqrt{(x^2-1)^3}}$ (B) $\frac{1}{x\sqrt{x^2-1}}$ (C) $\frac{1}{x^2\sqrt{x^2-1}}$

(Q44.) $\frac{d}{dx}\left(\cos\left(\sin^{-1}x\right)\right)$

(A) $\frac{-x}{1-x^2}$ (B) $\frac{-x}{\sqrt{1-x^2}}$ (C) $\frac{x}{\sqrt{1-x^2}}$

(Q45.) $\frac{d}{dx}\left(\ln\left(x^2+3x+5\right)\right)$

(A) $\frac{2x+3}{(x^2+3x+5)^2}$ (B) $\frac{1}{x^2+3x+5}$ (C) $\frac{2x+3}{x^2+3x+5}$

(Q46.) $\frac{d}{dx}\left(\left(\tan^{-1}(4x)\right)^2\right)$

(A) $\frac{8\tan^{-1}(4x)}{1+16x^2}$ (B) $\frac{2}{1+\left(\tan^{-1}(4x)\right)^2}$ (C) $\frac{8\tan^{-1}(4x)}{1+\left(\tan^{-1}(4x)\right)^2}$

(Q47.) $\frac{d}{dx}\left(\sqrt[3]{x^2}\right)$

(A) $\sqrt[3]{2x}$ (B) $\frac{2}{3\sqrt[3]{x}}$ (C) $\frac{3\sqrt{x}}{2}$

(Q48.) $\frac{d}{dx}\left(\sin\left(\sqrt{x}\ln x\right)\right)$

(A) $\cos\left(\frac{2+\ln x}{2\sqrt{x}}\right)$ (B) $\frac{(2x+\ln x)\cos\left(\sqrt{x}\ln x\right)}{2\sqrt{x}}$ (C) $\frac{(2+\ln x)\cos\left(\sqrt{x}\ln x\right)}{2\sqrt{x}}$

(Q49.) $\frac{d}{dx}\left(\csc(x^2)\right)$

(A) $-2x\csc(x^2)\cot(x^2)$ (B) $-\csc(x^2)\cot(x^2)$ (C) $-\csc(2x)\cot(2x)$

(Q50.) $\frac{d}{dx}\left(\frac{x^2-1}{\ln x}\right)$

(A) $\frac{2x^2\ln x - x^2 + 1}{x(\ln x)^2}$ (B) $\frac{x\ln x - x^2 + 1}{2x(\ln x)^2}$ (C) $\frac{2x^2\ln x - x^2 - 1}{x(\ln x)^2}$

(Q51.) $\frac{d}{dx}\left(10^x\right)$

(A) $\frac{10^x}{\ln 10}$ (B) $x(10)^{x-1}$ (C) $10^x \ln 10$

(Q52.) $\frac{d}{dx}\left(\sqrt[3]{x+(\ln x)^2}\right)$

(A) $\frac{x+2\ln x}{3x\sqrt[3]{\left(x+(\ln x)^2\right)^2}}$ (B) $\frac{x+2\ln x}{3\sqrt[3]{\left(x+(\ln x)^2\right)^2}}$ (C) $\frac{1+2\ln x}{3x\sqrt[3]{x+(\ln x)^2}}$

(Q53.) $\frac{d}{dx}\left(x^{\frac{3}{4}} - 2x^{\frac{1}{4}}\right)$

(A) $\frac{3\sqrt{x}-2}{4\sqrt[4]{x^3}}$ (B) $\frac{3\sqrt{x}-1}{4\sqrt[4]{x^3}}$ (C) $\frac{3\sqrt{x}-2}{2\sqrt{x^3}}$

(Q54.) $\frac{d}{dx}\left(\log_2\left(x\sqrt{1+x^2}\right)\right)$

(A) $\frac{1+2x}{(1+x^2)\ln 2}$ (B) $\frac{1+x}{x(1+x^2)\ln 2}$ (C) $\frac{1+2x^2}{x(1+x^2)\ln 2}$

(Q55.) $\frac{d}{dx}\left(\frac{x-1}{x^2-x+1}\right)$

(A) $\frac{-x^2+2x}{(x^2-x+1)^2}$ (B) $\frac{x^2-3x}{(x^2-x+1)^2}$ (C) $\frac{2x^2-x}{(x^2-x+1)^2}$

(Q56.) $\frac{d}{dx}\left(\frac{1}{3}\cos^3 x - \cos x\right)$

(A) $\sin^4 x\cos^2 x$ (B) $\sin^3 x$ (C) $\sin^3 x\cos x$

(Q57.) $\frac{d}{dx}\left(e^{x\cos x}\right)$

(A) $-x\sin x e^{x\cos x}$ (B) $e^{x\cos x}(x\sin x - \cos x)$ (C) $e^{x\cos x}(-x\sin x + \cos x)$

(Q58.) $\frac{d}{dx}\left(\left(x-\sqrt{x}\right)\left(x+\sqrt{x}\right)\right)$

(A) $2x-1$ (B) $x-\frac{1}{4x}$ (C) $1-\frac{1}{4x}$

(Q59.) $\frac{d}{dx}\left(\cot^{-1}\left(\frac{1}{x}\right)\right)$

(A) $\frac{-x^2}{1+x^2}$ (B) $\frac{1}{1+x^2}$ (C) $\frac{-1}{1-x^2}$

(Q60.) $\frac{d}{dx}\left(x\tan^{-1}x-\ln\left(\sqrt{x^2+1}\right)\right)$

(A) $\sqrt{x^2+1}$ (B) $\ln x\tan^{-1}x$ (C) $\tan^{-1}x$

(Q61.) $\frac{d}{dx}\left(\frac{x\sqrt{1-x^2}}{2}+\frac{\sin^{-1}x}{2}\right)$

(A) $\sqrt{1-x^2}$ (B) $x\sin^{-1}x$ (C) $\sin^{-1}x\sqrt{1-x^2}$

(Q62.) $\frac{d}{dx}\left(\frac{\sin x-\cos x}{\sin x+\cos x}\right)$

(A) $\frac{2}{\sin x+\cos x}$ (B) $\frac{2}{(\sin x+\cos x)^2}$ (C) $\frac{2\sin^2 x-2\cos^2 x}{(\sin x+\cos x)^2}$

(Q63.) $\frac{d}{dx}\left(4x^2\left(2x^3-5x^2\right)\right)$

(A) $40x^4-80x^3$ (B) $8x^5-20x^4$ (C) $48x^3-80x^2$

(Q64.) $\frac{d}{dx}\left(\sqrt{x}\left(4-x^2\right)\right)$

(A) $\frac{4-5x^2}{2\sqrt{x}}$ (B) $\frac{4-2x}{2\sqrt{x}}$ (C) $\frac{4-x^2}{4\sqrt{x}}$

(Q65.) $\frac{d}{dx}\left(\sqrt{\frac{1+x}{1-x}}\right)$

(A) $\frac{2}{(1-x)^2\sqrt{1+x}}$ (B) $\frac{1}{\sqrt{1+x}\sqrt{(1-x)^3}}$ (C) $\frac{1}{2\sqrt{1-x}\sqrt{(1+x)^3}}$

(Q66.) $\frac{d}{dx}\left(\sin(\sin x)\right)$

(A) $\cos x \sin(\cos x)$ (B) $\cos(\cos x)$ (C) $\cos x \cos(\sin x)$

(Q67.) $\frac{d}{dx}\left(\frac{1+e^{2x}}{1-e^{2x}}\right)$

(A) $\frac{4e^{2x}}{(1-e^{2x})^2}$ (B) $\frac{2e^{2x}}{(1-e^{2x})^2}$ (C) $\frac{-2e^{2x}}{(1-e^{2x})^2}$

(Q68.) $\frac{d}{dx}\left(\frac{x}{1+\ln x}\right)$

(A) $\frac{x}{(1+\ln x)^2}$ (B) $\frac{\ln x}{(1+\ln x)^2}$ (C) $\frac{x\ln x}{(1+\ln x)^2}$

(Q69.) $\frac{d}{dx}\left(x^{\frac{x}{\ln x}}\right)$

(A) $x^{\frac{x}{\ln x}}(1+\ln x)$ (B) $x^{\frac{x}{\ln x}}(x+\ln x)$ (C) $x^{\frac{x}{\ln x}}$

(Q70.) $\frac{d}{dx}\left(\ln\left(\sqrt{\frac{x^2-1}{x^2+1}}\right)\right)$

(A) $\frac{2x}{x^4-1}$ (B) $\frac{x-2}{x^4-1}$ (C) $\frac{-2x^2}{x^4-1}$

(Q71.) $\frac{d}{dx}\left(\tan^{-1}(2x+3)\right)$

(A) $\frac{1}{4x^2+12x+10}$ (B) $\frac{1}{2x^2+6x+5}$ (C) $\frac{1}{2x^2+6x+3}$

(Q72.) $\frac{d}{dx}\left(\cot^4(2x)\right)$

(A) $16\cot^3(2x)\csc^2(2x)$ (B) $8\cot^3(2x)\csc^2(2x)$ (C) $-8\cot^3(2x)\csc^2(2x)$

(Q73.) $\frac{d}{dx}\left(\frac{x^2}{1+\frac{1}{x}}\right)$

(A) $\frac{2x^3+3x^2}{(x+1)^2}$ (B) $\frac{2x^3-3x^2}{(x+1)^2}$ (C) $\frac{3x^3-2x^2}{(x+1)^2}$

(Q74.) $\frac{d}{dx}\left(e^{\frac{x}{1+x^2}}\right)$

(A) $\frac{e^{\frac{x}{1+x^2}}\left(1-2x^2\right)}{\left(1+x^2\right)^2}$ (B) $\frac{e^{\frac{x}{1+x^2}}\left(1-x^2\right)}{\left(1+x^2\right)^2}$ (C) $\frac{e^{\frac{x}{1+x^2}}\left(-1+2x\right)}{\left(1+x^2\right)^2}$

(Q75.) $\frac{d}{dx}\left(\left(\sin^{-1}x\right)^3\right)$

(A) $3\left(\cos^{-1}x\right)^2$ (B) $\frac{3\cos^{-1}x}{1-x^2}$ (C) $\frac{3\left(\sin^{-1}x\right)^2}{\sqrt{1-x^2}}$

(Q76.) $\frac{d}{dx}\left(\frac{1}{2}\sec^2(x)-\ln(\sec x)\right)$

(A) $\tan^3 x$ (B) $\tan^2 x\sec x$ (C) $2\tan^2 x\sec x$

(Q77.) $\frac{d}{dx}\left(\ln(\ln(\ln x))\right)$

(A) $\frac{1}{\ln(\ln(\ln x))}$ (B) $\frac{1}{x\ln x\ln(\ln x)}$ (C) $\frac{1}{x\ln(\ln x)}$

(Q78.) $\frac{d}{dx}\left(\pi^3\right)$

(A) $4\pi^4$ (B) $3\pi^2$ (C) 0

(Q79.) $\frac{d}{dx}\left(\ln\left(x+\sqrt{1+x^2}\right)\right)$

(A) $\frac{1}{\sqrt{1+x^2}}$ (B) $\frac{1}{x+\sqrt{1+x^2}}$ (C) $\frac{2x}{x+\sqrt{1+x^2}}$

(Q80.) $\frac{d}{dx}\left(\sinh^{-1}x\right)$

(A) $\frac{1}{x+\sqrt{1+x^2}}$ (B) $\frac{1}{\sqrt{1+x^2}}$ (C) $\frac{x^2}{x+\sqrt{1+x^2}}$

(Q81.) $\frac{d}{dx}\left(e^x\sinh x\right)$

(A) $2e^{2x}$ (B) $e^x\cosh x$ (C) e^{2x}

(Q82.) $\frac{d}{dx}\left(\operatorname{sech}\left(\frac{1}{x}\right)\right)$

(A) $\frac{\operatorname{sech}\left(\frac{1}{x}\right)\tanh\left(\frac{1}{x}\right)}{x^2}$ (B) $\frac{-\operatorname{sech}\left(\frac{1}{x}\right)\tanh\left(\frac{1}{x}\right)}{x^2}$ (C) $\frac{1}{\operatorname{sech}^2\left(\frac{1}{x}\right)}$

(Q83.) $\frac{d}{dx}\left(\cosh(\ln x)\right)$

(A) $\frac{2x^2-1}{x^2}$ (B) $\frac{x^2-1}{2x^2}$ (C) $\frac{x^2+1}{2x^2}$

(Q84.) $\frac{d}{dx}\left(\ln(\cosh x)\right)$

(A) $\coth x$ (B) $-\tanh x$ (C) $\tanh x$

(Q85.) $\frac{d}{dx}\left(\frac{\sinh x}{1+\cosh x}\right)$

(A) $\frac{1}{1+\cosh x}$ (B) $\frac{1}{(1+\cosh x)^2}$ (C) $\frac{-1}{(1+\cosh x)^2}$

(Q86.) $\frac{d}{dx}\left(\tanh^{-1}(\cos x)\right)$

(A) $\operatorname{csch} x$ (B) $-\csc x$ (C) $-\sec x$

(Q87.) $\frac{d}{dx}\left(x\tanh^{-1}x+\ln\sqrt{1-x^2}\right)$

(A) $\operatorname{sech}^2 x$ (B) $\ln x \tanh^{-1}x$ (C) $\tanh^{-1}x$

(Q88.) $\frac{d}{dx}\left(\sinh^{-1}(\tan x)\right)$

(A) $\sec x$ (B) $\operatorname{sech} x$ (C) $\cosh x$

(Q89.) $\frac{d}{dx}\left(\sin^{-1}(\tanh x)\right)$

(A) $\sec x$ (B) $\operatorname{sech} x$ (C) $\cosh x$

(Q90.) $\frac{d}{dx}\left(\frac{\tanh^{-1}x}{1-x^2}\right)$

(A) $\frac{1-2x\tanh^{-1}x}{(1-x^2)^2}$ (B) $\left(\tanh^{-1}x\right)^2$ (C) $\frac{1+2x\tanh^{-1}x}{(1-x^2)^2}$

(Q91.) $\frac{d}{dx}\left(x^3\right)$, use the definition of derivative

(Q92.) $\frac{d}{dx}\left(\sqrt{3x+1}\right)$, use the definition of derivative

(Q93.) $\frac{d}{dx}\left(\frac{1}{2x+5}\right)$, use the definition of derivative

(Q94.) $\frac{d}{dx}\left(\frac{1}{x^2}\right)$, use the definition of derivative

(Q95.) $\frac{d}{dx}(\sin x)$, use the definition of derivative

(Q96.) $\frac{d}{dx}(\sec x)$, use the definition of derivative

(Q97.) $\frac{d}{dx}\left(\sin^{-1} x\right)$, use the definition of derivative

(Q98.) $\frac{d}{dx}\left(\tan^{-1} x\right)$, use the definition of derivative

(Q99.) $\frac{d}{dx}(f(x)g(x))$, use the definition of derivative

(Q100.) $\frac{d}{dx}\left(\frac{f(x)}{g(x)}\right)$, use the definition of derivative

(Q101.) $\frac{d}{dx}\left({}^3x\right)$