

Calculus Section 3.5 Derivatives of Inverse Trigonometric Functions

Lesson 271 | Calculus AB | Inverse trigonometric derivatives

https://www.youtube.com/watch?v=26v_VeQdlV8

Original practice aligned to the saved video title.

Name: _____ Date: _____ Show your reasoning.

01

Differentiate $f(x)=8\cdot\sin(x/9) + \arctan(2\cdot x)$ on the interior of its real domain.

02

Differentiate $f(x)=11\cdot\sin(x/12) + \arctan(14\cdot x)$ on the interior of its real domain.

03

Differentiate $f(x)=11\cdot\sin(x/3) + \arctan(13\cdot x)$ on the interior of its real domain.

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04

Differentiate $f(x)=9\cdot\sin(x/7) + \arctan(11\cdot x)$ on the interior of its real domain.

05

Differentiate $f(x)=6\cdot\sin(x/14) + \arctan(2\cdot x)$ on the interior of its real domain.

06

Differentiate $f(x)=14\cdot\sin(x/2) + \arctan(4\cdot x)$ on the interior of its real domain.

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01

Differentiate $f(x)=8\cdot\text{asin}(x/9) + \text{atan}(2\cdot x)$ on the interior of its real domain.

Use $(\arctan u)'=u'/(1+u^2)$ and $(\arcsin u)'=u'/\sqrt{1-u^2}$. $f'(x)=2\cdot(16\cdot x^2 + \sqrt{(81 - x^2) + 4})/(\sqrt{(81 - x^2)}\cdot(4\cdot x^2 + 1))$.

02

Differentiate $f(x)=11\cdot\text{asin}(x/12) + \text{atan}(14\cdot x)$ on the interior of its real domain.

Use $(\arctan u)'=u'/(1+u^2)$ and $(\arcsin u)'=u'/\sqrt{1-u^2}$. $f'(x)=(2156\cdot x^2 + 14\cdot\sqrt{(144 - x^2) + 11})/(\sqrt{(144 - x^2)}\cdot(196\cdot x^2 + 1))$.

03

Differentiate $f(x)=11\cdot\text{asin}(x/3) + \text{atan}(13\cdot x)$ on the interior of its real domain.

Use $(\arctan u)'=u'/(1+u^2)$ and $(\arcsin u)'=u'/\sqrt{1-u^2}$. $f'(x)=(1859\cdot x^2 + 13\cdot\sqrt{(9 - x^2) + 11})/(\sqrt{(9 - x^2)}\cdot(169\cdot x^2 + 1))$.

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04

Differentiate $f(x)=9\cdot\text{asin}(x/7) + \text{atan}(11\cdot x)$ on the interior of its real domain.

Use $(\arctan u)'=u'/(1+u^2)$ and $(\arcsin u)'=u'/\sqrt{1-u^2}$. $f'(x)=(1089\cdot x^2 + 11\cdot\sqrt{49 - x^2} + 9)/(\sqrt{49 - x^2}\cdot(121\cdot x^2 + 1))$.

05

Differentiate $f(x)=6\cdot\text{asin}(x/14) + \text{atan}(2\cdot x)$ on the interior of its real domain.

Use $(\arctan u)'=u'/(1+u^2)$ and $(\arcsin u)'=u'/\sqrt{1-u^2}$. $f'(x)=2\cdot(12\cdot x^2 + \sqrt{196 - x^2} + 3)/(\sqrt{196 - x^2}\cdot(4\cdot x^2 + 1))$.

06

Differentiate $f(x)=14\cdot\text{asin}(x/2) + \text{atan}(4\cdot x)$ on the interior of its real domain.

Use $(\arctan u)'=u'/(1+u^2)$ and $(\arcsin u)'=u'/\sqrt{1-u^2}$. $f'(x)=2\cdot(112\cdot x^2 + 2\cdot\sqrt{4 - x^2} + 7)/(\sqrt{4 - x^2}\cdot(16\cdot x^2 + 1))$.