

## Calculus 3 3 Derivatives of Trigonometric Functions

Lesson 284 | Calculus AB | Trigonometric derivatives

<https://www.youtube.com/watch?v=S8PovzmsjLQ>

Original practice aligned to the saved video title.

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Show your reasoning.

01

Differentiate  $f(x)=11\cdot\sin(3\cdot x) + 5\cdot\cos(14\cdot x)$  on the interior of its real domain.

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02

Differentiate  $f(x)=2\cdot\sin(6\cdot x) + 3\cdot\cos(10\cdot x)$  on the interior of its real domain.

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03

Differentiate  $f(x)=6\cdot\sin(5\cdot x) + 5\cdot\cos(12\cdot x)$  on the interior of its real domain.

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04

Differentiate  $f(x)=12\cdot\sin(4\cdot x) + 14\cdot\cos(10\cdot x)$  on the interior of its real domain.

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05

Differentiate  $f(x)=5\cdot\sin(4\cdot x) + 11\cdot\cos(2\cdot x)$  on the interior of its real domain.

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06

Differentiate  $f(x)=5\cdot\sin(2\cdot x) + 7\cdot\cos(4\cdot x)$  on the interior of its real domain.

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01

Differentiate  $f(x)=11\cdot\sin(3\cdot x) + 5\cdot\cos(14\cdot x)$  on the interior of its real domain.

Use  $(\sin u)'=\cos(u)u'$  and  $(\cos u)'=-\sin(u)u'$ .  $f'(x)=-70\cdot\sin(14\cdot x) + 33\cdot\cos(3\cdot x)$ .

02

Differentiate  $f(x)=2\cdot\sin(6\cdot x) + 3\cdot\cos(10\cdot x)$  on the interior of its real domain.

Use  $(\sin u)'=\cos(u)u'$  and  $(\cos u)'=-\sin(u)u'$ .  $f'(x)=-30\cdot\sin(10\cdot x) + 12\cdot\cos(6\cdot x)$ .

03

Differentiate  $f(x)=6\cdot\sin(5\cdot x) + 5\cdot\cos(12\cdot x)$  on the interior of its real domain.

Use  $(\sin u)'=\cos(u)u'$  and  $(\cos u)'=-\sin(u)u'$ .  $f'(x)=-60\cdot\sin(12\cdot x) + 30\cdot\cos(5\cdot x)$ .

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04

Differentiate  $f(x)=12\cdot\sin(4\cdot x) + 14\cdot\cos(10\cdot x)$  on the interior of its real domain.

Use  $(\sin u)'=\cos(u)u'$  and  $(\cos u)'=-\sin(u)u'$ .  $f'(x)=-140\cdot\sin(10\cdot x) + 48\cdot\cos(4\cdot x)$ .

05

Differentiate  $f(x)=5\cdot\sin(4\cdot x) + 11\cdot\cos(2\cdot x)$  on the interior of its real domain.

Use  $(\sin u)'=\cos(u)u'$  and  $(\cos u)'=-\sin(u)u'$ .  $f'(x)=-22\cdot\sin(2\cdot x) + 20\cdot\cos(4\cdot x)$ .

06

Differentiate  $f(x)=5\cdot\sin(2\cdot x) + 7\cdot\cos(4\cdot x)$  on the interior of its real domain.

Use  $(\sin u)'=\cos(u)u'$  and  $(\cos u)'=-\sin(u)u'$ .  $f'(x)=-28\cdot\sin(4\cdot x) + 10\cdot\cos(2\cdot x)$ .