

Calculus Newton's Law of Cooling with Error Fix

Lesson 275 | Calculus AB | Exponential change and cooling

<https://www.youtube.com/watch?v=735PMOAFggc>

Original practice aligned to the saved video title.

Name: _____ Date: _____ Show your reasoning.

01

An object in a 45°C room starts at 85°C . The excess above room temperature halves every 3 minutes. Write $T(t)$ and find $T(6)$.

02

An object in a 10°C room starts at 80°C . The excess above room temperature halves every 6 minutes. Write $T(t)$ and find $T(12)$.

03

An object in a 65°C room starts at 95°C . The excess above room temperature halves every 5 minutes. Write $T(t)$ and find $T(10)$.

Calculus Newton's Law of Cooling with Error Fix

Lesson 275 | Calculus AB | Exponential change and cooling

<https://www.youtube.com/watch?v=735PMOAFggc>

Original practice aligned to the saved video title.

Name: _____ Date: _____ Show your reasoning.

04

An object in a 25°C room starts at 145°C . The excess above room temperature halves every 2 minutes. Write $T(t)$ and find $T(4)$.

05

An object in a 20°C room starts at 140°C . The excess above room temperature halves every 4 minutes. Write $T(t)$ and find $T(8)$.

06

An object in a 65°C room starts at 85°C . The excess above room temperature halves every 5 minutes. Write $T(t)$ and find $T(10)$.

Calculus Newton's Law of Cooling with Error Fix

Lesson 275 | Calculus AB | Exponential change and cooling

<https://www.youtube.com/watch?v=735PMOAFggc>

Original practice aligned to the saved video title.

01

An object in a 45°C room starts at 85°C . The excess above room temperature halves every 3 minutes. Write $T(t)$ and find $T(6)$.

Newton cooling gives $T(t)=45+40e^{(-kt)}$, with $k=\ln 2/3$. Equivalently $45+40(1/2)^{(t/3)}$. At $t=6$, $T=55^{\circ}\text{C}$.

02

An object in a 10°C room starts at 80°C . The excess above room temperature halves every 6 minutes. Write $T(t)$ and find $T(12)$.

Newton cooling gives $T(t)=10+70e^{(-kt)}$, with $k=\ln 2/6$. Equivalently $10+70(1/2)^{(t/6)}$. At $t=12$, $T=55/2^{\circ}\text{C}$.

03

An object in a 65°C room starts at 95°C . The excess above room temperature halves every 5 minutes. Write $T(t)$ and find $T(10)$.

Newton cooling gives $T(t)=65+30e^{(-kt)}$, with $k=\ln 2/5$. Equivalently $65+30(1/2)^{(t/5)}$. At $t=10$, $T=145/2^{\circ}\text{C}$.

Calculus Newton's Law of Cooling with Error Fix

Lesson 275 | Calculus AB | Exponential change and cooling

<https://www.youtube.com/watch?v=735PMOAFggc>

Original practice aligned to the saved video title.

04

An object in a 25°C room starts at 145°C . The excess above room temperature halves every 2 minutes. Write $T(t)$ and find $T(4)$.

Newton cooling gives $T(t)=25+120e^{(-kt)}$, with $k=\ln 2/2$. Equivalently $25+120(1/2)^{(t/2)}$. At $t=4$, $T=55^{\circ}\text{C}$.

05

An object in a 20°C room starts at 140°C . The excess above room temperature halves every 4 minutes. Write $T(t)$ and find $T(8)$.

Newton cooling gives $T(t)=20+120e^{(-kt)}$, with $k=\ln 2/4$. Equivalently $20+120(1/2)^{(t/4)}$. At $t=8$, $T=50^{\circ}\text{C}$.

06

An object in a 65°C room starts at 85°C . The excess above room temperature halves every 5 minutes. Write $T(t)$ and find $T(10)$.

Newton cooling gives $T(t)=65+20e^{(-kt)}$, with $k=\ln 2/5$. Equivalently $65+20(1/2)^{(t/5)}$. At $t=10$, $T=70^{\circ}\text{C}$.