# حل مراجعة الدرس الخامس من الوحدة السادسة Logarithmic Functions ريفيل منهج


موقع المناهج ⇦ المناهج الإماراتية ⇦ الصف الحادي عشر المتقدم ⇦ رياضيات ⇦ الفصل الأول ⇦ حلول ⇦ الملف



تاريخ إضافة الملف على موقع المناهج: 2024-10-27 23:08:08


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| المزيد من مادة رياضيات: | ملفات ا كتب للمعلم ا كتب للطالب ا اختبارات الكترونية ا اختبارات ا حلول ا عروض بوربوينت ا أوراق عمل منهج انجليزي ا ملخصات وتقارير ا مذكرات وبنوك ا الامتحان النهائي ا للمدرس |
| | إعداد: محمد زياد |

## التواصل الاجتماعي بحسب الصف الحادي عشر المتقدم

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| صفحة المناهج الإماراتية على فيسبوك |  |  |  |  |  |
| المواد على تلغرام | التربية الاسلامية | اللغة العربية | اللغة الانجليزية | الرياضيات | |

## المزيد من الملفات بحسب الصف الحادي عشر المتقدم والمادة رياضيات في الفصل الأول

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| 1 | حل مراجعة الدرسين الثالث والرابع من من الوحدة السادسة Functions Logarithmic منهج ريفيل |
| 2 | حل الدرسين الأول والثاني من الوحدة السادسة Functions Logarithmic منهج ريفيل |
| 3 | حل مراجعة الوحدة الخامسة functions Exponential الدوال الأسية منهج ريفيل |
| 4 | أوراق عمل الدرس الثاني الدوال اللوغاريتمية من الوحدة الثانية |

## المزيد من الملفات بحسب الصف الحادي عشر المتقدم والمادة رياضيات في الفصل الأول

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| 5 | أوراق عمل الدرس الأول الدوال الأسية من الوحدة الثانية |

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# Week4 29-9-2024

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Channels

## Lessons: 6.5

**1) A video posted on YouTube initially had 80 views as soon as it was posted. The total number of views to date has been increasing exponentially according to the exponential growth function $y = 80e^{0.2t}$, where t represents time measured in days since the video was posted. How many days does it take until 2500 people have viewed this video?**

$$y = 80e^{0.2t}$$

$$\frac{2500}{80} = \frac{80e^{0.2t}}{80}$$

$$\ln\frac{250}{8} = \ln e^{0.2t}$$

$$\frac{\ln\left(\frac{250}{8}\right)}{0.2} = \frac{0.2t}{0.2} \Rightarrow t = 17.2 \text{ days}$$

**2) In the year 2010, Barangay Santolan has a population of 3,200. Its rate increases 1.05% every year. What is the population of the barangay after 3 years?**

$$y = 3200 \cdot e^{0.0105t}$$

$$y(3) = 3200 \cdot e^{0.0105(3)}$$

$$= 3302.4 \approx 3302$$

**3) The half-life of a radioactive substance is 3,000 years, with an initial amount of substance of 500 grams.** find k

a

**a) Give an exponential model of the amount remaining after t years**

$0.5a \leftarrow y = ae^{-kt} \rightarrow 3000$

$\frac{0.5a}{a} = \frac{ae^{-k(3000)}}{a}$

$\ln e^{-3000k} = \ln 0.5$

$\frac{-3000k}{-3000} = \frac{\ln(0.5)}{-3000}$

$k = 0.000231$

$y(t) = 500e^{-0.000231t}$



**b) What amount of substance remains after 2,000 years?**

t

$y(2000) = 500 \cdot e^{-0.000231(2000)}$

$= 315.011\ g$

a k

**4) A car bought for 90,000 AED depreciates by 20% per year. After how many years can one buy the car at about half of its original price?**

t

$y = 45000$

$y(t) = a \cdot e^{-kt}$

$\frac{45000}{90000} = \frac{90000 \cdot e^{-0.2t}}{90000}$

$\ln 0.5 = \ln e^{-0.2t}$

$\frac{\ln(0.5)}{-0.2} = \frac{-0.2t}{-0.2}$

$t = 3.46$ years

5) Suppose that a population of a colony of bacteria increases exponentially, at the start of the experiment, there are 1000 bacteria. One hour later, the population has increased to 1200 bacteria. How long will it take for the population to reach 5000 bacteria?

$y(t) = a \cdot e^{kt}$

$\frac{1200}{1000} = \frac{1000 \cdot e^{k(1)}}{1000}$

$\ln e^{k} = \ln 1.2 \Rightarrow k = 0.18232$

$y(t) = 1000 \cdot e^{0.18232t}$

$\frac{5000}{1000} = \frac{1000\, e^{0.18232t}}{1000}$

$\ln e^{0.18232t} = \ln 5$

$\frac{0.18232t}{0.18232} = \frac{\ln 5}{0.18232} \Rightarrow t = 8.8275 \text{ hours}$

6) Michael owns 15,000$ and he wants to invest his money into an account that will double his money. He is thinking of a financial institution that can make his dream come true. He is considering investing his money in a lending company which offers a 15% annual rate interest compounded continuously. For how long, will he invest his money in that company to earn at least twice as much as he has now?

$y(t) = a \cdot e^{kt}$

$\frac{30000}{15000} = \frac{15000 \cdot e^{0.15t}}{15000}$

$\ln e^{0.15t} = \ln 2$

$\frac{0.15t}{0.15} = \frac{\ln 2}{0.15}$

$t = 4.62 \text{ years}$

**REASONING** A radioactive substance has a half-life of 32 years.

**a.** Determine the value of $k$ and the equation of decay for this radioactive substance.

**b.** How much of a 5-gram sample of the radioactive substance should be left after 100 years?

a

y = ?

t

$y(t) = a \cdot e^{-kt}$

$\downarrow$

$\frac{0.5a}{a} = \frac{a\,e^{-k(32)}}{a}$

$\ln e^{-32k} = \ln 0.5$

$\frac{-32k}{-32} = \frac{\ln(0.5)}{-32} \Rightarrow k = 0.02166$

$\Rightarrow y(t) = a \cdot e^{-0.02166t}$

$y = 5 \cdot e^{-0.02166(100)}$

$y = 0.5731$ gram