**In-Class Assignment # 4(4.1 – 4.5)**

1. **An investment decreases by 5% per year for 4 years. By what total percent does it decrease?**

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1. **The amount (in milligrams) of a drug in the body t hours after taking a pill is given by**

**. http://edugen.wileyplus.com/edugen/courses/crs6186/connally9780470484753/c04/math/math335.gif**

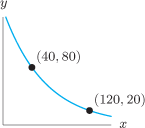
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| **(a)** | **What is the initial dose given?** |
| **(b)** | **What percent of the drug leaves the body each hour?** |

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| **(c)** | **What is the amount of drug left after 10 hours?** |
| **(d)** | **After how many hours is there less than 1 milligram left in the body?** |

1. **A population has size 5000 at time t = 0, with t in years.**

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| **(a)** | **If the population decreases by 100 people per year, find a formula for the population, P, at time t.** |
| **(b)** | **If the population decreases by 8% per year, find a formula for the population, P, at time t.** |

1. **find a formula for the exponential function**

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1. **Assume the equations for http://edugen.wileyplus.com/edugen/courses/crs6186/connally9780470484753/c04/math/math437.gif, http://edugen.wileyplus.com/edugen/courses/crs6186/connally9780470484753/c04/math/math582.gif, http://edugen.wileyplus.com/edugen/courses/crs6186/connally9780470484753/c04/math/math278.gif, and http://edugen.wileyplus.com/edugen/courses/crs6186/connally9780470484753/c04/math/math583.gif can all be written in the form http://edugen.wileyplus.com/edugen/courses/crs6186/connally9780470484753/c04/math/math320.gif.**

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| **http://edugen.wileyplus.com/edugen/courses/crs6186/common/art/pixel.gif** | |  | | --- | | **http://edugen.wileyplus.com/edugen/courses/crs6186/common/art/pixel.gif** | | |  | | --- | | **graph** | | |

**Which function has the largest value for a?**

**Which two functions have the same value for a?**

**Which function has the smallest value for b?**

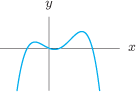
**Which function has the largest value for b?**

**6. The number of asthma sufferers in the world was about 84 million in 1990 and 300 million in 2009. Let N represent the number of asthma sufferers (in millions) worldwide t years after 1990.**

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| **(a)** | **Write N as a linear function of t. What is the slope? What does it tell you about asthma sufferers?** |
| **(b)** | **Write N as an exponential function of t. What is the growth factor? What does it tell you about asthma sufferers?** |

**7. Assume that all important features are shown in the graph of http://edugen.wileyplus.com/edugen/courses/crs6186/connally9780470484753/c04/math/math911.gif. Estimate**

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| **a.** | **http://edugen.wileyplus.com/edugen/courses/crs6186/connally9780470484753/c04/math/math912.gif** |
| **b.** | **http://edugen.wileyplus.com/edugen/courses/crs6186/connally9780470484753/c04/math/math913.gif** |
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|  | **8. A bank pays interest at the nominal rate of 1.3% per year. What is the effective annual rate if compounding is:**   |  |  | | --- | --- | | **(a)** | **Annual** | | **(b)** | **Monthly** | |

**9. Suppose $1000 is deposited into an account paying interest at a nominal rate of 8% per year. Find the balance three years later if the interest is compounded**

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| **(a)** | **Monthly** |

**(b) Find the nominal and effective rate of the investment.**

**(c) What does the effective rate mean to you in terms of the application problem.**

**10. One bank pays 5% interest compounded annually and another bank pays 5% interest compounded continuously. Given a deposit of $10000, what is the difference in the balance between the two banks in 8 years?**

**11. Rank the following three bank deposit options from best to worst.**

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| **http://edugen.wileyplus.com/edugen/courses/crs6186/common/art/pixel.gif** | |
| **http://edugen.wileyplus.com/edugen/courses/crs6186/common/art/pixel.gif** | |  |  | | --- | --- | | **•** | **Bank A: http://edugen.wileyplus.com/edugen/courses/crs6186/connally9780470484753/c04/math/math1141.gifcompounded daily** | | **•** | **Bank B: http://edugen.wileyplus.com/edugen/courses/crs6186/connally9780470484753/c04/math/math1317.gifcompounded monthly** | | **•** | **Bank C: http://edugen.wileyplus.com/edugen/courses/crs6186/connally9780470484753/c04/math/math1364.gifcompounded continuously** | |

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|  | **12. A population grows from its initial level of 22000 at a continuous growth rate of 7.1% per year.**   |  |  | | --- | --- | | **(a)** | **Find a formula for P=f(t), the population in year t.** | |

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| **(b)** | **By what percent does the population increase each year?** |