Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 614D Chapter 5 Quiz Review

Simplify each expression. Your answer should contain only positive exponents.

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Solve each equation.

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1. The foundation of your house has 1200 termites. The termites grow at a rate of 2.4% per day. How long until the amount of termites double?
2. You bought a computer for $2100 two years ago. Today it is worth $600. What is the decay rate?
3. You deposit $1600 in a bank account. Find the balance after 3 years for each of the following situations:
   1. Account pays 2.5% annual interest compounded monthly
   2. Account pays 1.75% annual interest compounded quarterly
   3. Account pays 0.4% annual interest compounded daily
4. Osmium-182 has a half-life of 21.5 hours. How many grams of a 10 gram sample would have decayed after 3 half-lives?
5. When a certain medicine enters the blood stream, it gradually dilutes, decreasing exponentially with a half-life of 3 days. The initial amount of the medicine in the blood stream is A0 milliliters. What will the amount be 30 days later?
6. The table shows the population P(t) (in thousands) for a small mythical nation at various times.

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| --- | --- | --- | --- | --- | --- | --- | --- |
| t (year) | 1825 | 1850 | 1875 | 1900 | 1925 | 1950 | 1975 |
| P(t) | 200 | 252 | 318 | 401 | 504 | 635 | 800 |

1. Graph the function on a separate sheet of paper.
2. How would you describe the growth of the population?
3. About how long does it take for the population to double?
4. Find and equation for P(t). (Hint: The exponent contains t – 1825)