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**Algebra 2 – Assignment 3-6**

3-30 Derek an Donovan were trying to solve the equation 44 = 16x. Derek had an idear.

“I know,” he said. “Isn’t 16 equal to 42 ?”

“Yeah, so what?” said Donovan.

“That means that we can rewrite the equation to look like 44 = (42)x. This is much easier to solve!” replied Derek.

“Yes,” said Donovan. “That makes sense. Isn’t there another way, too? Since 4 is the same as 22 and 16 is the same as 24, can’t we rewrite it as (22)4 = (24)x ?”

1. What do you think of Derek’s and Donovan’s methods? Will they both work?
2. Use both methods to solve 44 = 16x.
3. Now solve 35 = 92x.

3-31 Solve each equation below for x. For parts (c) and (d), use the ideas from problem 3-30 so that you do not have to use Guess and Check.

1. 2(x+3) = 22x b. 3(2x+1) = 33

c. 9x = 340 d. 870 = 2x

3-46 Examine each sequence below. State whether it is arithmetic, geometric, or neither. For the sequences that are arithmetic, find the closed form for t(n). For the sequences that are geometric, find the recursive form for the sequence t(n).

a. 1, 4, 7, 10, 13, . . . b. 0, 5, 12, 21, 32, . . .

c. 2, 4, 8, 16, 32, . . . d. 5, 12, 19, 26, . . .

e. x, x + 1, x + 2, x + 3, . . . f. 3, 12, 48, 192, . . .

3-53 Assume that a DVD loses 60% of its value every year it is in a video store. Suppose the initial value of the DVD was $80.

1. What multiplier would you use to calculate the video’s new values?
2. What is the value of the DVD after one year?
3. Write a function V(t) = ? to express the value in t years.
4. When, if ever, does the video have no value?
5. Sketch a graph of this function. Be sure to scale and label the axes.

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**Algebra I Review**

Factor if possible.

1. 6x – 12 2. x2 – 196 3. x2 + 6x – 16

4. 6x2 – 7x – 3 5. 3(2x + 1) + x(2x + 1)

Challenge. Factor. Then verify your results my multiplying the factors.

6. 8x3 + 27 Hint: a3 + b3 = (a + b)(a2 – ab + b2)