Name

11-7B Lesson Master

Questions on SPUR Objectives
See Student Edition pages 792–795 for objectives.

SKILLS Objective D

In 1–4, complete the table of function values. Find the first three sets of finite differences.

1. $y = x^2 - x^3$

x	–2	–1	0	1	2	3
y						

1st differences _____ _____ _____ _____ _____

2nd differences _____ _____ _____ _____

3rd differences _____ _____ _____

2. $y = 2 \cdot 3^x$

x	–2	–1	0	1	2	3
y						

1st differences _____ _____ _____ _____ _____

2nd differences _____ _____ _____ _____

3rd differences _____ _____ _____

3. $y = x^3 - 27$

x	–2	–1	0	1	2	3
y						

1st differences _____ _____ _____ _____ _____

2nd differences _____ _____ _____ _____

3rd differences _____ _____ _____

4. $y = \log x$

x	1	2	3	4	5
y					

1st differences _____ _____ _____ _____

2nd differences _____ _____ _____

3rd differences _____ _____

5. You should have found 2 functions in Questions 1–4 with unequal third differences. Explain why.

_____

_____

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Fill in the Blanks In 6 and 7, fill in the blank so that the sentence is always true.

6. If a polynomial has degree 34, the _____ differences will be the first set of differences that are equal.

7. If a set of x-values form an arithmetic sequence, and the set of 4th differences of the corresponding y-values are equal and the set of 3rd differences of the corresponding y-values are not equal, a polynomial of degree _____ will fit the data.

In 8–15, determine whether there is a polynomial of degree five or less that will fit the data. If so, find the degree of the polynomial.

8.

x	1	2	3	4	5	6
y	6	13	32	69	130	221

9.

x	–4	–3	–2	–1	0	1
y	1407	1539	1674	1814	1960	2113

10.

x	–18	–12	–6	0	6	12
y	–304	–124	–16	20	–16	–124

11.

x	0	5	10	15	20	25
y	0	–5	–80	–405	–1280	–3125

12.

x	0	1	2	3	4	5
y	10	12.4	14.8	17.2	19.6	22

13.

x	10	20	30	40	50	60	70
y	–200	–209	–280	–443	–584	–325	1096

14. The first six terms of an arithmetic sequence with first term 7 and a common difference of 4. _____

15. The sequence in which $a_1 = 3$ and $a_n = 4a_{n-1} - 2$. _____

REVIEW Lesson 5-6, Objective C

In 16 and 17, solve the system.

16. $\begin{cases} \frac{1}{3}x - y = 6 \\ \frac{1}{2}x + 2y = -5 \end{cases}$

17. $\begin{cases} 2a + b - c = -9 \\ 3a + 3b + 2c = 4 \\ a + 2b - 2c = -12 \end{cases}$

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