

## Unit 1 Review

Find the common difference of the following:

1. 

x	y
0	0
1	2
2	10
3	24
4	44

2. 

x	y
0	2
1	1
2	6
3	23
4	58
5	117

3. 

x	$ax^3 + bx^2 + cx + d$
0	d
1	$a + b + c + d$
2	$8a + 4b + 2c + d$
3	$27a + 9b + 3c + d$
4	$64a + 16b + 4c + d$
5	$125a + 25b + 5c + d$

4. Find the equation of the graphs for questions 1 and 2.

Multiply the following polynomials using the box method (tabular):

5.  $(2x^2 + x - 10)(x - 2)$

6.  $(3x^2 - x + 9)(2x^2 + 6x - 1)$

Divide the following using the reverse tabular method:

7.  $(2x^3 + 11x^2 + 7x + 10) \div (x + 5)$

8.  $(2x^7 + x^5 - 4x^3 + 14x^2 - 2x + 7) \div (2x^2 + 1)$

9.  $(x^6 - 1) \div (x + 1)$

Divide the following using the long division algorithm:

10.  $\frac{(x^3 + 6x^2 + 12x + 8)}{(x + 2)}$

11.  $\frac{(4r^3 + 2r^2 + 2r + 1)}{(2r + 1)}$

12.  $\frac{(x^4 + 4x^3 + 3x^2 + 4x + 2)}{(x^2 + 1)}$

Perform the indicated operation and write in standard form:

13.  $(x - 4)(x + 5) - (x)(x^2 + 3)$

14.  $(3x^3 - x^4 + 2x) + (3x - 4)^2$

15.  $(2x - 8)^3$

16.  $\frac{(x^3 + 1000)}{x + 10}$

17.  $\frac{(x^4 - 81)}{(x^2 - 9)}$

18.  $\frac{(a^3b^3 - 64)}{(ab - 4)}$

Express each of the following in simplest radical form:

19.  $\sqrt{72}$

20.  $\sqrt[3]{54x^7}$

21.  $\sqrt{18x^5y^3}$

22.  $\frac{3}{5\sqrt{2}}$

23.  $\frac{3\sqrt{5}}{4\sqrt{3}}$

24.  $\frac{2}{\sqrt[3]{9}}$

25.  $\frac{7}{5+\sqrt{2}}$

26.  $\frac{2+\sqrt{7}}{3-\sqrt{7}}$

27.  $\sqrt{16} + \sqrt{27} - \sqrt{28}$

28.  $3\sqrt{5} - \sqrt{\frac{5}{16}} - \sqrt{\frac{2}{5}}$

Find all solutions to the given equations.

29.  $(x-3)(x+4)(x-2\sqrt{7})=0$

30.  $(x^2-16)(x)(x^4-81)=0$

31. Find two different polynomial functions that have zeros at 0, 4, and -5 of multiplicity 1.