

**Accelerated Geom/Alg 2**  
**Polynomial Test #1 Review**

Name \_\_\_\_\_

Date \_\_\_\_\_ Block \_\_\_\_\_

Use synthetic division to find the quotient.

1.  $\frac{x^4 - 5x^3 + 7x^2 - 8x + 1}{x - 2}$

2.  $\frac{3x^3 - 2x + 1}{x + 3}$

Use long division to find the quotient.

3.  $5x^3 - 7x^2 + 2x - 4 \div x^2 - 1$

4.  $3x^4 + 8x^3 - 2x^2 - x + 3 \div 3x + 2$

5. Use Pascal's Triangle to expand:  $(2x - 3y)^4$

6. Use Pascal's Triangle to expand:  $(8 - x)^3$

7. Find the coefficient of  $a^3b^4$  in the expansion of  $(4a + b)^7$ .
8. Consider the expansion of  $(x + 3)^{10}$ .
- (a) Write down the number of terms in this expansion.
- (b) Find the term containing  $x^2$ .
9. Find the coefficient of  $x^4$  in the expansion of  $(2 - x)^6$ .
10. Find the coefficient of  $x^5$  in the expansion of  $(3x - 2)^8$ .
11. Determine the constant term in the expansion of  $\left(\frac{2}{x^2} + x\right)^9$ .
12. Find the coefficient of  $a^8b^4$  in the expansion of  $(a + b)^{12}$ .
13. Find the term containing  $x^{10}$  in the expansion of  $(5 + 2x^2)^7$ .
14. Given that  $(2 - \sqrt{5})^3 = p + q\sqrt{5}$  where  $p$  and  $q$  are integers, find
- (a)  $p$
- (b)  $q$

15. (a) Expand  $\left(e + \frac{2}{e}\right)^4$  in terms of  $e$ .

(b) Express  $\left(e + \frac{2}{e}\right)^4 + \left(e - \frac{2}{e}\right)^4$  as the sum of three terms.

16. (a) Expand  $(x - 3)^4$  and simplify your result.

(b) Find the term in  $x^3$  in  $(2x + 5)(x - 3)^4$ .

Find the inverse of the following functions.

17.  $f(x) = 8x - 9$

18.  $g(x) = 5(x - 15)$

19.  $h(x) = 6x + 24$

20.  $j(x) = (x - 9)^2 + 1$

21.  $k(x) = \sqrt{2x - 5} - 3$

22.  $m(x) = 4x^2 - 1$

Perform the following operations for the functions:

$$f(x) = 2x - 3 \quad g(x) = 2x^2 - 7x + 4$$

23.  $f(g(x))$

24.  $g(f(x))$

25.  $f(f(x))$

26.  $g(g(x))$