Key

Chapter 6 Review

Simplify the following. No negative exponents.

1. $\left(2c^2\right)^2\left(5c^7d^2\right)^0$ = $4c^4$

2. $\dfrac{6a^4b^6c^2}{48a^6b^3c^5}$ = $\dfrac{b^3}{8a^2c^3}$

3. $\left(6x^2-2x-8\right)-\left(5x^2-2x-7\right)$

   x^2-1

4. $\left(\dfrac{3x^3}{y}\right)^{-2}$ $\dfrac{y^2}{9x^6}$

5. $\left(2x^2-3x+4\right)(x+1)$ = $2x^3-x^2+x+4$

6. Find $p(-2)$ for $p(x)=-2x^2+3x-1$.

   $p(-2) = -15$

7. Find $f(a-2)$ for $f(x)=4x+7$.

   $f(a-2) = 4a-1$

8. Find $4\cdot f(a+2)$ for $f(x)=4x+7$.

   $4 \cdot f(a+2) = 16a+60$

9. Give the viewing window you would use to produce a complete graph of $y=x^3-6x^2+4x-4$.

   $[-5,10] \times [-25,10]$

10. State the total number of roots (real roots plus non-real roots) for $f(x)=x^3-6x^2+4x-4$

    3

11. Find the all the zeros for $f(x)=x^3-6x^2+4x-4$.

    $x = 5.396$

12. Find the relative extrema for $y=x^3-6x^2+4x-4$.
    Make sure you label the type of extrema (i.e., relative maximum or relative minimum).

    Rmax: $(0.367, -3.291)$ R min: $(3.633, -20.709)$

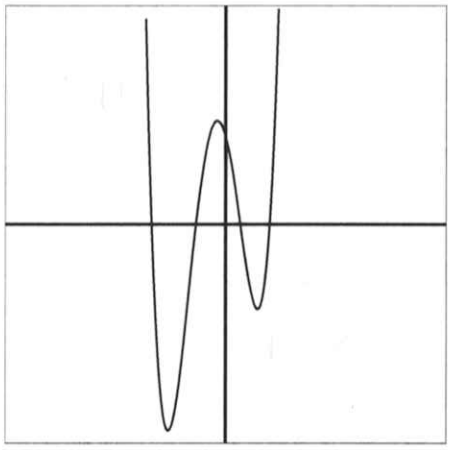
13. Give the degree of the polynomial $p(x)=3x^5-2x+5$.

    5th

14. Find the y-intercept for the polynomial $p(x)=3x^5-2x+5$

    5

Use the following graph for questions 15 – 18



15. Is the graphed function an odd degree polynomial or even degree polynomial? even degree

16. What is the maximum degree for the polynomial graphed? 4th

17. Describe the end behavior.
    $x \to \infty : y \to +\infty$
    $x \to -\infty : y \to +\infty$

18. Is the leading coefficient positive or negative? positive

For questions 19 –21 use the following material.

Before any amusement park is built, park owners examine information about the people that they expect to come to the park. This requires the study of demographics or population statistics. A demographer is a scientist who collects and interprets data about populations.

The following table lists the actual and predicted percent of the U.S. population between ages 18 and 24 years.

Year	1960	1970	1980	1990	2000	2010	2020	2030
% of Population	8.9	12.1	13.3	10.4	9.4	9.6	8.5	8.4

A demographer might model the relationship by using an approximate polynomial. For this problem, let 1960 be year 0. Then 1970 is year 10, 1980 is year 20, and so on.

19. Find the following functions: (**Do not** round the coefficients.)
    a. Cubic Function: $y = 1.09596*10^{-4}x^3 - 0.013055 1948x^2 + 0.3697222222x + 9.240909091$
    b. Quartic Function: $y = -3.522727*10^{-6}x^4 + 6.0277778*10^{-4}x^3 - 0.034443 1818x^2 + 0.6585858586x + 8.818181818 18$

20. Suppose the demographer chose to use the quartic function. Use your calculator to estimate to the nearest hundredth of a percent, the percent of the U.S. population (between the ages of 18 and 24) in the year 2012. 8.93%

21. Suppose the demographer chose to use the quartic function. Use your calculator to find the approximate year the percent of the US population between the ages of 18 and 24 will be at 8%.

    2032