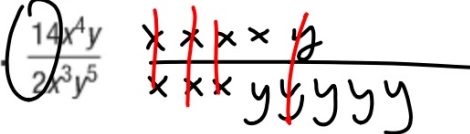


Algebra 2 Ch. 5 Review
Quiz 5.7-5.8
Tomorrow: test Ch. 5

5-1 Operations with Polynomials

Simplify. Assume that no variable equals 0.

11. $\frac{14x^4y}{2x^3y^5}$



$$7 \frac{x}{y^4}$$

~~$$7x^{-4}y$$~~

* Before Christmas

$$(m + p)(m^2 - 2mp + p^2) \quad *$$

5-2 Dividing Polynomials

*

Simplify.

17. $\frac{12x^4y^5 + 8x^3y^7 - 16x^2y^6}{4xy^5}$

$$\frac{12x^4y^5}{4xy^5} + \frac{8x^3y^7}{4xy^5} - \frac{16x^2y^6}{4xy^5}$$

$$3x^3 + 2x^2y^2 - 4xy$$

19. $(a^4 + 5a^3 + 2a^2 - 6a + 4)(a + 2)^{-1}$

*

$3a + 2$



5-3 Polynomial Functions

State the degree and leading coefficient of each polynomial in one variable. If it is not a polynomial in one variable, explain why.

22. $5x^6 - 3x^4 + x^3 - 9x^2 + 1$

*

Find $p(-2)$ and $p(x + h)$ for each function.

*

25. $p(x) = x^2 + 2x - 3$

5-4 Analyzing Graphs of Polynomial Functions

Complete each of the following.

- Graph each function by making a table of values.
- Determine the consecutive integer values of x between which each real zero is located.
- Estimate the x -coordinates at which the relative maxima and minima occur.

28. $h(x) = x^3 - 4x^2 - 7x + 10$

$$x = -2$$

$$x = 1$$

$$x = 5$$

Use technology

Show ordered pairs on your graph

Make sure that you answer the question

$$\text{R max } x = -1$$

$$\text{R min } x = 3$$

$$4 < x < 5$$

5-5 Solving Polynomial Equations

Factor completely. If the polynomial is not factorable, write *prime*.

34. $a^4 - 16$

36. $54x^3y - 16y^4$

Solve each equation.

38. $x^3 + 2x^2 - 35x = 0$

5-6 The Remainder and Factor Theorems

Use synthetic substitution to find $f(-2)$ and $f(4)$ for each function.

41. $f(x) = x^2 - 3$

Given a polynomial and one of its factors, find the remaining factors of the polynomial.

45. $3x^3 + 20x^2 + 23x - 10$; $x + 5$

5-7 Roots and Zeros

State the possible number of positive real zeros, negative real zeros, and imaginary zeros of each function.

48. $f(x) = -2x^3 + 11x^2 - 3x + 2$

⊕ 3, 1

⊖ —

+	-	imag	total
3	0	—	3
1	0	2	3

5-8 Rational Zero Theorem

Find all of the zeros of each function.

53. $f(x) = x^3 + 4x^2 + 3x - 2$

\oplus 1 $\quad \pm 1, 2$

\ominus 2, 0 $\quad -2 \overline{) 1 \quad 4 \quad 3 \quad -2}$

$$\begin{array}{r} x^2 + 2x - 1 \quad \downarrow \quad -2 \quad -4 \quad 2 \\ 1 \quad 2 \quad -1 \quad 0 \end{array}$$

$$x = \frac{-2 \pm \sqrt{4 - 4 \cdot 1 \cdot (-1)}}{2}$$

$$x = \frac{-2 \pm \sqrt{8}}{2}$$

$$x = -2$$

$$x = -1 + \sqrt{2}$$

$$x = -1 - \sqrt{2}$$

$$\frac{8}{4^2}$$

$$x = \frac{-2 \pm 2\sqrt{2}}{2}$$

$$= -\frac{2}{2} \pm \frac{2\sqrt{2}}{2}$$

$$= -1 \pm \sqrt{2}$$

$$\begin{array}{r}
 x^2 + 4 \\
 x - 5 \\
 \hline
 -5x^2 - 20 \\
 \hline
 x^3 \quad 4x
 \end{array}
 \quad
 x^3 - 5x^2 + 4x - 20 = 0$$

$$(x-5)(x^2+4) = 0$$

$$(x-5)(x-2i)(x+2i) = 0$$

$$x - 5 = 0$$

$$x = 5$$

$$x - 2i = 0$$

$$x = 2i$$

$$x + 2i = 0$$

$$x = -2i$$

$$\begin{array}{r}
 x - 2i \\
 x + 2i \\
 \hline
 \cancel{2ix} - 4i^2 \\
 x^2 - \cancel{2ix} - 2ix + 4 \\
 \hline
 x^2 + 4
 \end{array}$$