Name Answer key [redacted] Date [redacted]

Honors Alg. 1½: Term 3: Quiz 2: Exponent Rules and Dividing Polynomials

Write each polynomial in standard form. Then classify it by its degree and by the number of terms.

1. $f(m) = 4m^2 + 7m^4$ (3)

$f(m) = 7m^4 + 4m^2$

D: 4

binomial

2. $f(t) = 4t + 3t^3 + 2t - 7$ (3)

$f(t) = 3t^3 + 6t - 7$

D: 3

trinomial

3. $f(xy) = 6xy + 5x^2y + 3x^3y^2$ (3)

$f(xy) = 3x^3y^2 + 5x^2y + 6xy$

Degree: 5

trinomial

Divide by long division. (4)

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

$x^2 - 2x + 4$

$x + 2 \overline{)\, x^3 - 1}$

$-(x^3 + 2x^2)$

$-2x^2 - 1$

$-(-2x^2 - 4x)$

$4x - 1$

$-(4x + 8)$

-9

$x^2 - 2x + 4 - \frac{9}{x+2}$

5. $(2x^4 - 9x^3 + 21x^2 - 26x + 12)(2x - 3)^{-1}$ (4)

$x^3 - 3x^2 + 6x - 4$

$2x - 3 \overline{)\, 2x^4 - 9x^3 + 21x^2 - 26x + 12}$

$-(2x^4 - 3x^3)$

$-6x^3 + 21x^2$

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

$12x^2 - 26x$

$-(12x^2 - 18x)$

$-8x + 12$

$-(-8x + 12)$

$x^3 - 3x^2 + 6x - 4$

Divide by synthetic division. (3) (4)

6. $\frac{3x^3 - 6x + 12}{x - 2}$

2	3	0	−6	12
	↓	6	12	12
	3	6	6	24

$3x^2 + 6x + 6 + \frac{24}{x-2}$

7. $2x - 1 \overline{)\, 2x^4 + 3x^3 - 4x^2 + x + 1}$ (4)

$x - \frac{1}{2} \overline{)\, x^4 + \frac{3}{2}x^3 - 2x^2 + \frac{1}{2}x + \frac{1}{2}}$

½	1	3/2	−2	½	½
	↓	½	1	−½	0
	1	2	−1	0	½

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

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

24

Simplify the expression. (4)

8. $\dfrac{(3xy)^2(4x^2y^2)^2}{-36x^7y^2}$

$\dfrac{9x^2y^2 \cdot 16x^4y^4}{-36x^7y^2}$ 1

$\dfrac{144x^6y^6}{-36x^7y^2}$ 1

$\dfrac{-4y^4}{x}$ 1

9. $(3y^3 + 2y + 1) \div 3y$ (2)

$\dfrac{3y^3}{3y} + \dfrac{2y}{3y} + \dfrac{1}{3y}$ 1

$y^2 + \dfrac{2}{3} + \dfrac{1}{3y}$ 1

Word Problems:

10. Identify the errors in planning the solution or solving the problem. Then write the correct solution. (10)

Use polynomial division to divide $x^4 + x^3 - 7x - 3$ by $x + 3$. What is the quotient and remainder?

$$\begin{array}{r} x^3 - 2x^2 - 1 \\ x+3\overline{)\,x^4 + 1x^3 - 7x - 3} \\ -x^4 + 3x^3 \\ \hline -2x^3 - 7x \\ -2x^3 - 6x \\ \hline -1x - 3 \\ -1x - 3 \\ \hline 0 \end{array}$$

they didn't make x

The quotient is $x^3 - 2x^2 - 1$ with remainder 0. 1

$x^3 - 2x^2 + 6x - 25 + \dfrac{72}{x+3}$

$$\begin{array}{r} x^3 - 2x^2 + 6x - 25 \\ x+3\overline{)\,x^4 + x^3 - 7x - 3} \\ -x^4 - 3x^3 \\ \hline -2x^3 - 7x \\ +2x^3 + 6x^2 \\ \hline +6x^2 - 7x \\ -6x^2 + 18x \\ \hline -25x - 3 \\ +25x + 75 \\ \hline 72 \end{array}$$

11. The expression $V(x) = x^3 - 13x + 12$ represents the volume of a rectangular safe in cubic feet. The length of the safe is $x + 4$. What linear expressions with integer coefficients could represent the other dimensions of the safe? Assume that the height is greater than the width. (4)

$$\begin{array}{r|rrrr} -4 & 1 & 0 & -13 & 12 \\ & \downarrow & -4 & 16 & -12 \\ \hline & 1 & -4 & 3 & 0 \end{array}$$ 1

$x^2 - 4x + 3$ 1

$(x-1)(x-3)$ 1