

Chapter 9 Review (circle final answer)

Name each polynomial by degree (1st word) and number of terms (2nd word).

1)  $10x + 6$

LINEAR BINOMIAL

2)  $10x^3 - 10$

CUBIC BINOMIAL

3)  $1 - 4k^2 - 4k$

QUADRATIC TRINOMIAL

4)  $-1$

CONSTANT MONOMIAL

Simplify each sum. — *Combine Like Terms; AND order H → L exponent*

5)  $(-3x^2 + 2x^4 - 6x^3) + (x^2 + 7x^3 + 6x^4)$

$8x^4 + x^3 - 2x^2$

6)  $(-8x^2 - x - 6) + (8x^2 + 2 - x)$

$-2x - 4$

Simplify each difference. Step 1 - rewrite as an addition problem. → THEN ADD.

7)  $(-6x^2 - x^3 + 6x) - (8x^3 - 6 + 6x^2)$

$-6x^2 - x^3 + 6x - 8x^3 + 6 - 6x^2$

$-9x^3 - 12x^2 + 6x + 6$

8)  $(6x^4 - x - x^2) - (-x - 2x^4 + 8x^2)$

$6x^4 - x - x^2 + x + 2x^4 - 8x^2$

$8x^4 - 9x^2$

Find each product. Remember to write answers in standard form (high to low exponents with the constant last.)

9)  $4(x^2 - 5x + 2)$

$4x^2 - 20x + 8$

10)  $2x(x^2 - 3x + 4)$

$2x^3 - 6x^2 + 8x$

11)  $(3x + 4)(3x - 4)$

$9x^2 - 12x + 12x - 16 =$

$9x^2 - 16$

12)  $(5x - 5)(x + 4)$

$5x^2 + 20x - 5x - 20 =$

$5x^2 + 15x - 20$

13)  $(x - 2)(x - 3)$

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

$x^2 - 5x + 6$

Factor the common factor out of each expression.

14)  $\frac{-8x^4}{-2} + \frac{10x^2}{-2} - \frac{8}{-2} =$

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

15)  $\frac{3x^3}{3x} + \frac{21x^2}{3x} + \frac{27x}{3x} =$

$3x(x^2 + 7x + 9)$

Factor. Remember to mentally multiply to check.

$$16) x^2 + 2x - 15$$

$$\begin{array}{r} 1 \ 15 \\ 3 \ 5 \end{array}$$

$$(x+5)(x-3)$$

OR  $(x-3)(x+5)$

$$17) x^2 + x - 90$$

$$\begin{array}{r} 1 \ 90 \\ 2 \ 45 \\ 3 \ 30 \\ 5 \ 18 \\ 6 \ 15 \\ 9 \ 10 \end{array}$$

$$(x+10)(x-9)$$

OR  $(x-9)(x+10)$

$$18) x^2 - 10x + 25$$

$$\begin{array}{r} 1 \ 25 \\ 5 \ 5 \end{array}$$

$$(x-5)(x-5)$$

$$19) x^2 - 81$$

$$\begin{array}{r} 1 \ 81 \\ 3 \ 27 \\ 9 \ 9 \end{array}$$

$$(x+9)(x-9)$$

OR  $(x-9)(x+9)$

$$20) x^2 + 11x + 28$$

$$\begin{array}{r} 1 \ 28 \\ 2 \ 14 \\ 4 \ 7 \end{array}$$

$$(x+4)(x+7)$$

OR  $(x+7)(x+4)$

$$21) x^2 - 17x + 70$$

$$\begin{array}{r} 1 \ 70 \\ 2 \ 35 \\ 5 \ 14 \\ 7 \ 10 \end{array}$$

$$(x-7)(x-10)$$

OR  $(x-10)(x-7)$

Solve each equation by factoring. Remember to use your calculator to check in the original equation!

$$22) x^2 + 8x + 15 = 0$$

$$\begin{array}{r} 1 \ 15 \\ 3 \ 5 \end{array}$$

$$(x+3)(x+5) = 0$$

$$\begin{array}{r} x+3=0 \\ -3 \quad -3 \\ \hline x = -3 \end{array}$$

$$\begin{array}{r} x+5=0 \\ -5 \quad -5 \\ \hline x = -5 \end{array}$$

$$C: (-3)^2 + 8(-3) + 15 = 0$$

$$0 = 0 \checkmark$$

$$C: (-5)^2 + 8(-5) + 15 = 0$$

$$0 = 0 \checkmark$$

$$23) x^2 - 10x + 24 = 0$$

$$\begin{array}{r} 1 \ 24 \\ 2 \ 12 \\ 3 \ 8 \\ 4 \ 6 \end{array}$$

$$(x-4)(x-6) = 0$$

$$\begin{array}{r} x-4=0 \\ +4 \quad +4 \\ \hline x = 4 \end{array}$$

$$\begin{array}{r} x-6=0 \\ +6 \quad +6 \\ \hline x = 6 \end{array}$$

$$C: (4)^2 - 10(4) + 24 = 0$$

$$0 = 0 \checkmark$$

$$C: (6)^2 - 10(6) + 24 = 0$$

$$0 = 0 \checkmark$$