Unit 7 Day 12 HW Unit 7 Study Guide

Name: KEY

Name the following polynomials according to the **degree** and the **number of terms**.

1. $3x^4 - 8x + 1$ 4th Degree trinomial

2. $7x^2$ quadratic monomial

3. $5y^2 - 3y$ quadratic binomial

4. 11 constant monomial

Add or Subtract the following polynomials.

5. $(2x^3 - 4x^2 + 7x - 10) + (4x^3 - 2x + 8)$

$\boxed{6x^3 - 4x^2 + 5x - 2}$

6. $(2x^5 - 2x^3 + 9x) - (3x^5 - 7x^4 + 2x^3 - 4x + 1)$

$2x^5 - 2x^3 + 9x - 3x^5 + 7x^4 - 2x^3 + 4x - 1$

$\boxed{-x^5 + 7x^4 - 4x^3 + 13x - 1}$

7. $4x^2(3x^2 - 1x - 2) - (-5x^2 + x - 7)$

$12x^4 - 4x^3 - 8x^2 + 5x^2 - x + 7$

$\boxed{12x^4 - 4x^3 - 3x^2 - x + 7}$

Multiply the following expressions. You may need to use the distributive property, FOIL, or a special product pattern. You decide!!

8. $(x + 5)(x - 3)$ (FOIL)

$x^2 - 3x + 5x - 15$

$\boxed{x^2 + 2x - 15}$

9. $(3x + 2)(2x - 1)$ (FOIL)

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

$\boxed{6x^2 + x - 2}$

10. $(x + 2)(x^2 - 3x - 7)$

$x^3 - 3x^2 - 7x + 2x^2 - 6x - 14$

$\boxed{x^3 - x^2 - 13x - 14}$

11. $(x - 2)(x + 2)$

$x^2 + 2x - 2x - 4$

$\boxed{x^2 - 4}$

12. $(x + 6)^2$ $(x+6)(x+6)$

$\boxed{x^2 + 12x + 36}$

13. $(2x - 5)^2$ $(2x-5)(2x-5)$

$\boxed{4x^2 - 20x + 25}$

← not simplify!

Solve each factored expression for x (*hint – Think ZPP*):

14. $2x(x - 7) = 0$

$2x = 0$ $\quad$ $x - 7 = 0$

$\boxed{x = 0}$ $\quad$ $\boxed{x = 7}$

15. $(x + 1)(x - 10) = 0$

$x + 1 = 0$ $\quad$ $x - 10 = 0$

$\boxed{x = -1}$ $\quad$ $\boxed{x = 10}$

16. $(x - 3)(x - 8) = 0$

$x - 3 = 0$ $\quad$ $x - 8 = 0$

$\boxed{x = 3}$ $\quad$ $\boxed{x = 8}$

17. $(1 - 2x)(x + 12) = 0$

$1 - 2x = 0$ $\quad$ $x + 12 = 0$

$\frac{-2x}{-2} = \frac{-1}{-2}$ $\quad$ $\boxed{x = -12}$

$\boxed{x = 1/2}$

Factor out the GCF of each expression

18. $9a^3 + 15a^2$

$\boxed{3a^2(3a + 5)}$

19. $10x^5y^4 + 14x^3y^8 - 2xy$

$\boxed{2xy(5x^4y^3 + 7x^2y^7 - 1)}$

20. $18y^3 + 27y^8$

$\boxed{9y^3(2 + 3y^5)}$

21. $-5x + 25x^7 - 15x^3$

$\boxed{-5x(1 - 5x^6 + 3x^2)}$

4 STEPS!

Solve. ① Set equal to 0 ② GCF! ③ Factor ( )( ) = 0 ④ Set each factor equal to 0 and solve

22. $x^2 + 2x - 3 = 0$

$(x + 3)(x - 1) = 0$

$x + 3 = 0$ $\quad$ $x - 1 = 0$

$\boxed{x = -3}$ $\quad$ $\boxed{x = 1}$

23. $x^2 + 3x = 4$

$x^2 + 3x - 4 = 0$

$(x + 4)(x - 1) = 0$

$x + 4 = 0$ $\quad$ $x - 1 = 0$

$\boxed{x = -4}$ $\quad$ $\boxed{x = 1}$

Solve.

24. $x^2 - 2x - 5 = 2x$

$-2x \quad -2x$

$x^2 - 4x - 5 = 0$

$(x-5)(x+1) = 0$

$x - 5 = 0 \qquad x + 1 = 0$

$\boxed{x = 5} \qquad \boxed{x = -1}$

25. $2x^2 - 11x - 21 = 0$

$7 \cdot -3$

$-7 \cdot 3$

$(2x+3)(x-7) = 0$

$2x + 3 = 0 \qquad x - 7 = 0$

$2x = -3 \qquad \boxed{x = 7}$

$\boxed{x = \frac{-3}{2}}$

26. $6x^2 + 5x = 6$

$-6 \quad -6$

$6x^2 + 5x - 6 = 0$

$(2x+3)(3x-2) = 0$

$2x + 3 = 0 \qquad 3x - 2 = 0$

$2x = -3 \qquad 3x = 2$

$\boxed{x = \frac{-3}{2}} \qquad \boxed{x = \frac{2}{3}}$

27. $x^2 + 6x - 28 = 9x$

$-9x \quad -9x$

$x^2 - 3x - 28 = 0$

$(x-7)(x+4) = 0$

$\boxed{x = 7} \quad \boxed{x = -4}$

28. $25c^4 - 4c^2 = 0$ GCF!

$c^2(25c^2 - 4) = 0$

$c^2(5c-2)(5c+2) = 0$

$c^2 = 0 \qquad 5c - 2 = 0 \qquad 5c + 2 = 0$

$\boxed{c = 0} \qquad \boxed{c = 2/5} \qquad \boxed{c = -2/5}$

29. $x^2 - 2x + 1 = 0$

$(x-1)(x-1) = 0$

$\boxed{x = 1}$

30. $18x^3 + 24x^2 + 8x = 0$ GCF!

$2x(9x^2 + 12x + 4) = 0$

$2x(3x+2)(3x+2) = 0$

$2x = 0 \qquad 3x + 2 = 0$

$\boxed{x = 0} \qquad \boxed{x = \frac{-2}{3}}$

31. $8c^4 - 18c^2 = 0$ GCF!

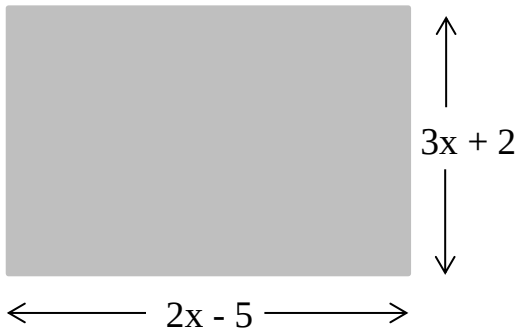
$2c^2(4c^2 - 9) = 0$

$2c^2(2c-3)(2c+3) = 0$

$2c^2 = 0 \qquad 2c - 3 = 0 \qquad 2c + 3 = 0$

$\boxed{c = 0} \qquad \boxed{c = 3/2} \qquad \boxed{c = -3/2}$

32. Write a polynomial in standard form that represents that AREA and PERIMETER of the rectangle below.



AREA $l \cdot w$

$(3x+2)(2x-5)$

$6x^2 - 15x + 4x - 10$

$\boxed{6x^2 - 11x - 10}$

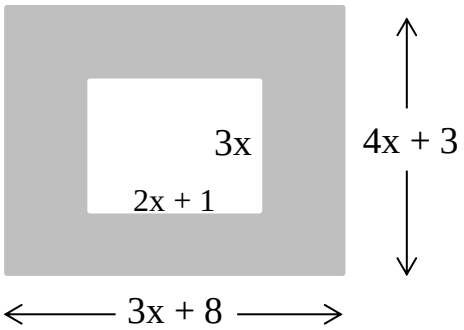
PERIMETER $2l + 2w$

$2(3x+2) + 2(2x-5)$

$6x + 4 + 4x - 10$

$\boxed{10x - 6}$

33) Write a polynomial that represent the area of the shaded area below. (Assume the shapes are rectangles)



A(whole) − A(unshaded)

$(4x+3)(3x+8) - 3x(2x+1)$

$12x^2 + 32x + 9x + 24 - 6x^2 - 3x$

$\boxed{6x^2 + 38x + 24}$