See next pg. for work

Name: _____ **Date**_____ **#49 Operations with polynomials**

Do all work on your own paper to simplify each expression. Make sure you pay attention to the sign between the polynomials so you do the correct operation.

1) $(4x-6)(x+2)$

$4x^2+2x-12$

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

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

3) $(6x-1)(x^2+2x+7)$

$6x^3+11x^2+40x-7$

4) $(4x^5+2x^2+1)(1-x)$

$-4x^6+4x^5-2x^3+2x^2-x+1$

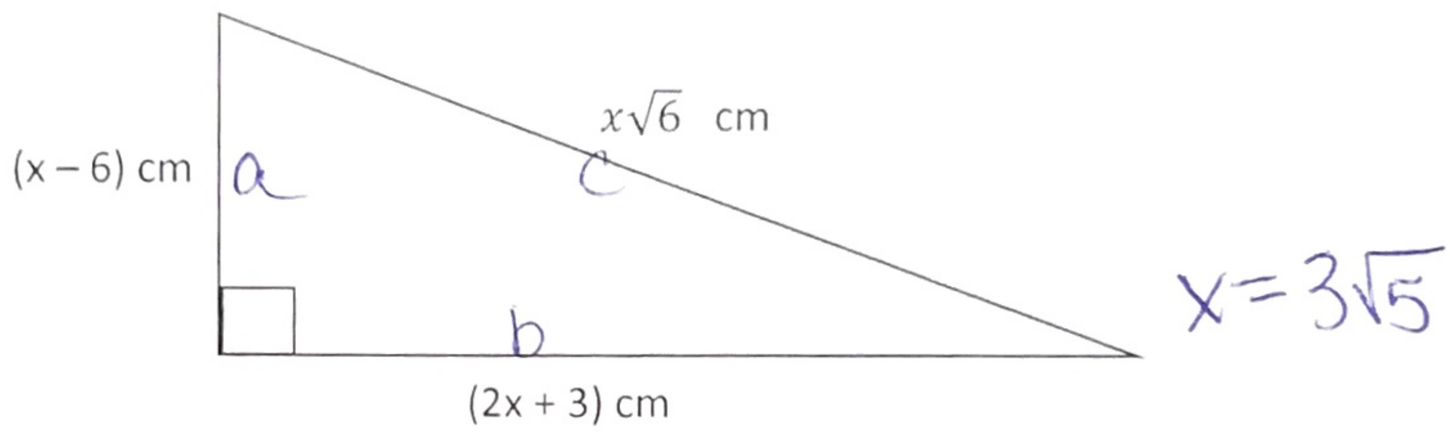
5) $(3x^4-2x^3+4)(-x^2+2x-12)$

$-3x^6+8x^5-40x^4+24x^3-4x^2+8x-48$

6) $(1-3x^2)(4x^3-5x+10)$

$-12x^5+19x^3-30x^2-5x+10$

7) Find the value of x (hint, use the Pythagorean thm)



$x=3\sqrt{5}$

8) $(4m^4-m^2)+(5m^2+m^4)$

$5m^4+4m^2$

9) $(5x+x^4)-(3x^4+4x)$

$-2x^4+x$

10) $(5+7x^3+3x^2)+(-12+5x+6x^2)$

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

11) $(4+3x^2+8x^3)+(-7x^3+12x^5+6x^2)$

$12x^5+x^3+9x^2+4$

12) $(4n^3-5)-(n^3+n^4)-(4n^4+2)$

$-5n^4+3n^3-7$

13) $(4v^3+5v+2v^4)+(2v-2v^4)-(8v^3-6v^4)$

$6v^4-4v^3+7v$

14) Simplify and then classify by degree and number of terms: $2x+3x^2(4x-5)$

$12x^3-15x^2+2x$

3rd degree trinomial

(1) $(4x-6)(x+2)$

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

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

$4x^2+8x-6x-12$

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

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

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

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

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

(3) $(6x-1)(x^2+2x+7)$

$6x(x^2+2x+7)-1(x^2+2x+7)$

$6x(x^2)+6x(2x)+6x(7)-1(x^2)-1(2x)-1(7)$

$6x^3+12x^2+42x-1x^2-2x-7$

$\boxed{6x^3+11x^2+40x-7}$

(4) $(4x^5+2x^2+1)(1-x)$

$4x^5(1-x)+2x^2(1-x)+1(1-x)$

$4x^5(1)+4x^5(-x)+2x^2(1)+2x^2(-x)+1(1)+1(-x)$

$4x^5-4x^6+2x^2-2x^3+1-x$

$\boxed{-4x^6+4x^5-2x^3+2x^2-x+1}$

(5) $(3x^4-2x^3+4)(-x^2+2x-12)$

$3x^4(-x^2+2x-12)-2x^3(-x^2+2x-12)+4(-x^2+2x-12)$

$3x^4(-x^2)+3x^4(2x)+3x^4(-12)-2x^3(-x^2)-2x^3(2x)-2x^3(-12)+4(-x^2)+4(2x)+4(-12)$

$-3x^6+6x^5-36x^4+2x^5-4x^4+24x^3-4x^2+8x-48$

$\boxed{-3x^6+8x^5-40x^4+24x^3-4x^2+8x-48}$

(6) $(1-3x^2)(4x^3-5x+10)$

1 times anything doesn't change the value → $1(4x^3-5x+10)-3x^2(4x^3-5x+10)$

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

$4x^3-5x+10-12x^5+15x^3-30x^2$

$\boxed{-12x^5+19x^3-30x^2-5x+10}$

(7) $a^2+b^2=c^2$

$(x-6)^2+(2x+3)^2=(x\sqrt{6})^2$

$(x-6)(x-6)+(2x+3)(2x+3)=x^2\sqrt{6}^2$

$x(x-6)-6(x-6)+2x(2x+3)+3(2x+3)=x^2\cdot 6$

$x^2-6x-6x+36+4x^2+6x+6x+9=6x^2$

$5x^2+45=6x^2$

$-5x^2 \quad -5x^2$

$\sqrt{45}=\sqrt{x^2}$

$x=\sqrt{45}$

$\sqrt{9\cdot 5}$

$\boxed{x=3\sqrt{5}}$

(8) $(4m^4-m^2)+(5m^2+m^4)$

$4m^4-m^2+5m^2+m^4$

$\boxed{5m^4+4m^2}$

(9) $(5x+x^4)-(3x^4+4x)$

$5x+x^4-3x^4-4x$

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

(10) $(5+7x^3+3x^2)+(-12+5x+6x^2)$

$5+7x^3+3x^2-12+5x+6x^2$

$\boxed{7x^3+9x^2+5x-7}$

(11) $(4+3x^2+8x^3)+(-7x^3+12x^5+6x^2)$

$4+3x^2+8x^3-7x^3+12x^5+6x^2$

$\boxed{12x^5+x^3+9x^2+4}$

(12) $(4n^3-5)-(m^3+n^4)-(4n^4+2)$

$4n^3-5-n^3-n^4-4n^4-2$

$\boxed{-5n^4+3n^3-7}$

(13) $(4v^3+5v+2v^4)+(2v-2v^4)-(8v^3-6v^4)$

$4v^3+5v+2v^4+2v-2v^4-8v^3+6v^4$

$\boxed{6v^4-4v^3+7v}$

(14) $2x+3x^2(4x-5)$

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

$2x+12x^3-15x^2$

$\boxed{12x^3-15x^2+2x}$ 3rd degree trinomial