Name_____

1.1 Operations with Polynomials

Determine if the following are polynomials. If they are polynomials then place them in standard form (SF), identify the degree, leading coefficient (LC), and constant.

1) $-3 - 2x^6 - 10x^2$
   Polynomial: Yes / No
   SF:
   Degree:
   LC:
   Constant:

2) $-5x^3 + 4x^2 - x^4$
   Polynomial: Yes / No
   SF:
   Degree:
   LC:
   Constant:

3) $-10 - n^2 - 4^{-2} + 7n$
   Polynomial: Yes / No
   SF:
   Degree:
   LC:
   Constant:

4) $10 + 9x^2 - 6x - 3x^3$
   Polynomial: Yes / No
   SF:
   Degree:
   LC:
   Constant:

5) $-4r - 3r^2 + 9r^{\frac{1}{4}} - 6$
   Polynomial: Yes / No
   SF:
   Degree:
   LC:
   Constant:

Simplify each expression.

6) $\left(-13x^4 + 5\right) - \left(-10 + 8x^4 + 3x^2\right)$

7) $\left(6 - 7r^3 - 3r\right) + \left(8 + 4r\right)$

8) $\left(4x^4 + 7x - 8x^2\right) + \left(8x^2 - 8x - 2x^4\right)$

9) $\left(2x^4 + 5\right) - \left(2x - 4x^2 + 1\right) - \left(5x + 3\right)$

10) $\left(4x^2 - 3\right) - \left(6x^2 - 5x^4 + 5x + 8\right) + \left(6x + 2x^4\right)$

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Solve for the (?) polynomial.

11) Find the sum of $(4x^2 + 2x + 1) + (?) = ($
$7x^2 + 5x + 4)$.

12) Find the sum of $(-2x^2 - 3x - 4) + (?) = ($
$x^2 + 2x + 1)$.

13) Find the difference of $(7x^2 + 3x + 4) - (?) =$
$(x^2 + x + 3)$.

14) Find the difference of $(-4x^2 - 2x + 5) - (?) =$
$(6x^2 + 5x - 3)$.

Find each product.(You must draw your box)

15) $5r^2(5r - 8)$

16) $4v(7v - 3)$

17) $(3n - 8)(3n + 8)$

18) $(6r - 5)^2$

19) $(8n^2 - 4n + 8)(3n - 2)$

20) $(x^2 - 7x + 5)(7x^2 + 7x - 6)$

Perform the indicated operation.

21) $f(n) = n^3 + 4$
$g(n) = 2n + 3$
Find $f(n) \cdot g(n)$

22) $g(x) = -4x + 2$
$h(x) = 2x + 3$
Find $g(x) \cdot h(x)$

23) $f(x) = 4x - 2$
$g(x) = x^2 - x$
Find $f(x) + g(x)$

24) $f(n) = 3n$
$g(n) = 2n + 1$
Find $f(n) - g(n)$

Review: Find the Greatest Common Factor (is the greatest factor that divides two numbers)

25) $24 \; ; \; 36$

26) $20 \; ; \; 48$

27) $6x^2$; $15x^5$

28) $16k^4$; $30k^{10}$