Purpose: In this problem set, you will be practicing adding and multiplying polynomials.

1. Simplify each expression involving adding polynomials below.

   (a) $(5x - 8x^4 + 9) - (3x - 2x^4 - 6x^2)$

   (f) $(5 - 4g^4) + (2g^5 - 3 - 9g^4) - (6 + 7g)$

   (b) $(5k^2 - 9k^4) - (8k^2 + 3k^3) - (2k^3 + 7k^4)$

   (g) $(2k^2 - 5k^4) + (7k^4 + 3) - (8k^3 + 9k^2)$

   (c) $(9q^4 - 5) + (6 + 3q^3 + 8q^4)$

   (h) $(2c - 5 + 6c^3) - (7c^3 + 9 + 3c^5)$

   (d) $(8y^2 + 5) - (9y^2 + 6 + y^5)$

   (i) $(2k^4 + 7k^2 - 8) + (6k^4 - 5 - 9k)$

   (e) $(2n^2 - 3n^4) + (9n^2 + 6n^3) - (4n^4 + 8n^2)$

   (j) $(2 + 6p^4) + (5p^5 - 9 - 8p^4)$

2. Simplify each expression involving multiplying monomials below.

(a) $(z^{-4}x^{-1})^{-1} \cdot (z^{-3}x)^3$

(g) $y^{-4}(-7z^{-2})^{-2}$

(b) $(x^{-5} \cdot -3x^5)^{-1}$

(h) $(-5zx)^{-3} \cdot (4z)^{-1}$

(c) $y^{-5}(z^{-2})^{-2}$

(i) $(7z^{-3}y^{-3})^3 \cdot z^{-3}y^{-1}$

(d) $(6z^{-5})^{-1} \cdot (z^2)^{-1}$

(j) $(x^{-3} \cdot x^{-1})^{-3}$

(e) $(x^{-5}7z^{-2})^3$

(k) $(2z^{-2}y^2)^{-2} \cdot (zy^2)^2$

(f) $(y^{-3}x^5)^{-3} \cdot (-9y^4x^5)^{-2}$

(l) $-9(y^{-5})^{-1}$

3. Simplify each expression involving multiplying monomials and polynomials below.

(a) $9z(4z + 3d)$

(f) $5(8z - 3)$

(b) $2q^3(4q^2 + 8q - 5)$

(g) $6(8d^2 - 9dy + 3y^2)$

(c) $5g(9g^2 - 6g - 2)$

(h) $5k^3(7k^2 + 2kb - 3b^2)$

(d) $5d^2(4d^2 + 8dn + 3n^2)$

(i) $7z(5z - 9)$

(e) $6p(5p^2 - 3pn - 8n^2)$

(j) $9(4k^2 + 6k - 5)$

4. Simplify each expression involving multiplying binomials below.

(a) $(z-7)(z-5)$

(f) $(c-6)(5c-8)$

(b) $(d+2)(5d+6)$

(g) $(8d-7)(d+4)$

(c) $(9p+2)(p+5)$

(h) $(5b+2)(6b+8)$

(d) $(3r-2)(4r-8)$

(i) $(p-2)(p-5)$

(e) $(q+3)(q-6)$

(j) $(n-7)(3n+6)$