1. Completely expand each expression. To earn full credit your work must be presented in the manner discussed and illustrated during lecture.

   a. Expand $(2x+3)(x-5)$.

   b. Expand $(5x-1)^2$.

   c. Expand $(3x+4)(x^2-2x+12)$.

   d. Expand $(x+1)(x-1)(2x-1)$.

   e. Expand $(x+2)^3$.

   f. Expand $-4x^2y^5(-2x-x^4y^6+1)$

   g. Expand $(3x^2y^6+a^2c^4)(3x^2y^6-a^2c^4)$

   h. Expand $(x+y)(x^2-xy+y^2)(x^3-y^3)$

2. Completely simplify each expression. To earn full credit your work must be presented in the manner discussed and illustrated during lecture. Remember, simplified expressions never contain negative exponents.

   a. Simplify $\dfrac{x^5}{x^{12}}$.

   b. Simplify $\dfrac{x^{-12}}{x^{-5}}$.

   c. Simplify $\dfrac{12a^5b^9}{50a^9b^2}$

   d. Simplify $\dfrac{3^{-1}x^{-2}y^5}{3^2y}$

   e. Simplify $\dfrac{5x^{-2}y}{(5x)^{-2}}$.

   f. Simplify $\left(\dfrac{-2x^3y^{-4}}{x^8y^{-2}}\right)^{-1}$.

   g. Simplify $(-3x^{-3}y^{-1}z)^{-2}$.

   h. Simplify $\left(-\dfrac{7r^{-1}t^{-22}}{rs^{-12}t^{41}}\right)^0$.

   i. Simplify $\dfrac{(4xy^{-1})^{-1}(3x^{-1})}{(3x^{-1})^{-1}}$

   j. Simplify $a^2b^5\cdot\dfrac{a^7b^{-2}}{a^{-1}b^{-2}}$

3. Consider the function $g(x)=5-3x$.

   a. Solve the equation $g(x)=9$.

   b. Find the value of g at 7.

4. Perform each division.

   a. $\dfrac{36x^7-14x^3+12x^2}{12x^2}$

   b. $\dfrac{-24a^4b^8+16a^3b^3-8a^2b^2}{-8a^2b^2}$

5. Provide the requested bits of information in the provided blanks.

a. Write an expression equivalent to $-4x^{-1}$ that has no negative exponents. a. _____

b. What is the degree of the term $6x^7 y$? b. _____

c. What are the terms of the polynomial $4xy - 7x$? c. _____

d. What is the degree of the polynomial $4x^2 y^5 - 5x^6 + 2$? d. _____

e. What is the leading coefficient the polynomial $4x^7 - x^{12} + 2$? e. _____

f. What is the simplified form (value) of -5^{-1}? f. _____

g. What is the simplified form (value) of $\dfrac{1}{5^{-1}}$? g. _____

h. What is the simplified form (value) of $\dfrac{-5^{-1}}{5^{-1}}$? h. _____

i. What is the simplified form (value) of $\dfrac{-5}{5^{-1}}$? i. _____

6. Find the values of $w(2)$ and $w(-2)$ if $w(x) = -x^{-2} + \dfrac{1}{4}$.

7. Consider the function f shown in Figure 1. Answer each of the following questions in regards to this function.

a. State the domain and range of f.

b. State the values of $f(3)$ and $f(-5)$.

c. For what value(s) of x does $f(x) = -2$?

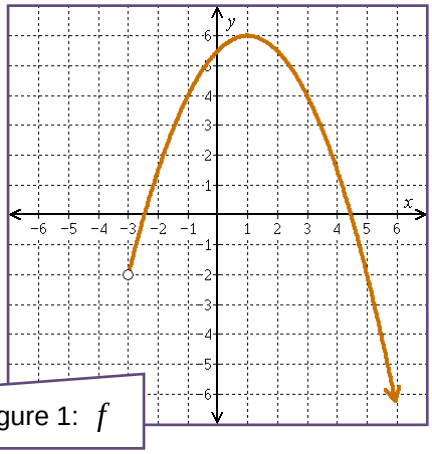

Figure 1: f