

MTH 65 – Winter Term 2011
Test 1 – Given February 7

Name _____

Except for the fill in the blank questions, to earn full credit you need to show steps and organize your work in a manner consistent with that illustrated and discussed in class.

1. Expand and simplify each expression. This problem continues on page 2.

a. Expand and simplify $(x + 4)(x + 6)$. (3 points)

**These directions apply
for the entire test.**

b. Expand and simplify $(3 + r)(3 - r)$. (3 points)

c. Expand and simplify $(x + 1)(x^2 + 2x + 3)$. (4 points)

d. Expand and simplify $\left(4y - \frac{1}{4}\right)^2$. (4 points)

e. Expand and simplify $(3x y^2 - 4y)(3x y^2 + 4y)$. (4 points)

f. Expand and simplify $(x + y + 1)(x + y - 1)$. (6 points)

g. Expand and simplify $(2x + 3)(2x - 3) + (5x + 4)(x - 2)$. (6 points)

2. Simplify the expression $(6y^3 + 2y^2 - y - 11) - (y^2 - 8y + 11)$. (5 points)

3. Simplify the sum $x^2y - 4xy + 5x + 2 + 2(3xy^2 + 2xy + y)$. (5 points)

4. Simplify the expression $\frac{18x^5 + 20x^4 - 40x^2}{4x}$. (5 points)

5. Simplify the expression $\frac{18x^7 - 9x^6 + 20x^5 - 2x^4}{-2x^4}$. (5 points)

6. State the terms of the polynomial $-x^7y^3 + 7x + 7y + 1$. For each term, also state its degree and its coefficient. (8 points total)

Term	Degree	Coefficient

7. Consider the function $k(x) = 9 - 2x$. (3 points each)

a. Find the value of k at 5.

b. Find the solution to the equation $k(x) = 5$.

8. Simplify each expression on your scratch paper and write the result in the provided blank. You do not need to turn in your scratch paper; your answers will be marked right (✓) or wrong (✗). Remember, among other things, that an expression is not considered simplified if it contains any negative exponents. (2 points each)

a. Simplify $\frac{3x^7}{x^{11}}$.

a.

b. Simplify $\frac{3x^{-7}}{x^{11}}$.

b.

c. Simplify -2^4 .

c.

d. Simplify $\frac{(3x^2)^{-1}}{3x^2}$.

d.

e. Simplify $(-2x^6y)^2$.

e.

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

f.

g. Simplify $3^{-2} + 9^{-1}$.

g.

h. Simplify $\left(-\frac{x^{-2}x^{-5}x^6}{x^{-2}x^5}\right)^0$.

h.

i. Simplify $-3^0 + 3^0$.

i.

j. Simplify $2(5-4)^3$.

j.

9. Simplify each expression. (5 points each)

a. Simplify $(2y^3)^4 y^{-6}$.

b. Simplify $\frac{(3^{-1}x^{-2})^2}{(3xy^{-3})^{-2}}$.

10. Find the value of $f(9)$ if $f(x) = (2 - x)(6 - x)$. To earn full credit you need to show steps and organize your work in a manner consistent with that illustrated and discussed in class. (3 points)

11. Consider the function g shown in Figure 1. What is the greatest function value that occurs anywhere on the function? (3 points)

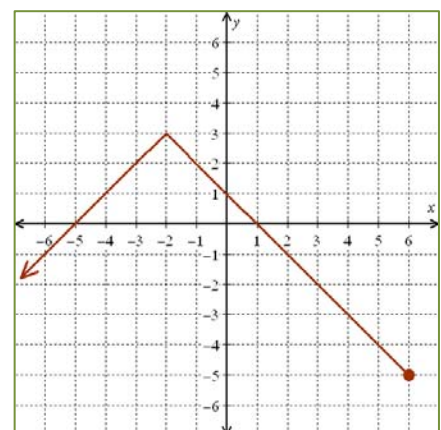


Figure 1: g