

PROBLEM SOLVING SESSION Revised Fall 2004  
MATH 020  
Weeks VII, VIII, IX

Week VII Slope, Equation of a Line

1) Find the **slope** of the line given **two points**.

a)  $(-3, -2)$  and  $(-5, -6)$

b)  $(5, 1)$  and  $(-3, 6)$

c)  $(9, -4)$  and  $(9, -7)$

d)  $(-2, 4)$  and  $(-5, 4)$

2.) **Graph** by using the **slope and y- intercept**.

a)  $y = 2x + 3$

b)  $y = -\frac{2}{3}x - 2$

c)  $2x + 4y = 12$

3.) Find the equation of a line given a **point** and a **slope** for the following:  
Write all equations in slope intercept form

a). Point  $(0, 5)$  and  $m = 3$

b). Point  $(0, -2)$  and  $m = \frac{-1}{3}$

c) Point  $(3, 1)$  and  $m = -2$

d) Point  $(-3, 2)$  and  $m = \frac{1}{3}$

e) Point  $(-4, -1)$  and  $m = \frac{3}{4}$

4.) Find the equation of a line that passes through the **two given points** for each of the following:

a)  $(2, 3)$  and  $(4, 1)$

b).  $(0, 4)$  and  $(1, 5)$

c)  $(3, 2)$  and  $(5, 6)$

d).  $(-3, 0)$  and  $(-1, 5)$

e)  $(0, 0)$  and  $(-2, -3)$

### **Week VIII POLYNOMIALS**

#### **Add and Subtract polynomials:**

1. Add  $3x + 7y$  and  $6x + 8y$
2. Add  $6x^2 + 5x$  and  $8x^3 - 7x$
3. Find the sum of  $4x^2 - 7x + 6$  and  $-3x + 2$
4. Subtract  $(-3x + 6) - (x - 8)$
5. Subtract  $(-3x^2 - 7x) - (x - 7)$
6. Subtract  $(-7x^2 + 3x - 7) - (x^2 - 8x + 9)$
7. Simplify  $(7x^2 + 3x - 6) - (-x^2 + 6)$
8. Simplify  $(-3x^2 + 6) + (3x - 9)$
9. Simplify  $(2x^2 - 7x) + (-3x - 6)$
10. Simplify  $(-3x^2 + 6x - 9) - (3x^2 + 6x - 9)$

### Multiply polynomials:

I

1.  $(-3x^2 y)(-4 xy^2)$

6.  $(-4x^3)(-8x^2)$

2.  $(7xy^2)(-2x^4 y^6)$

7.  $(7 xy^2 z)(-2 xyz)$

3.  $(7rst)(-2 rst)$

8.  $(x^4)^3$

4.  $(-6 x^2 y^3)(2x^3 y^8)$

9.  $(ab^2)^3$

5.  $(3 ab^2 c)(-4 abc)$

10.  $(2 a^5 b^7)^3$

II

1.  $a(a + 4)$

7.  $(x + 3)(x + 8)$

2.  $-3x(x - 6)$

8.  $(x - 2)(x - 7)$

3.  $-5z(2z^2 - 7z)$

9.  $(y + 4)(y - 3)$

4.  $7xy^2(3x^2 y - 1)$

10.  $(a + 2)^2$

5.  $(3x - 5)2x$

6.  $(b^2 - 2b - 7)(-3b)$

11.  $(5a + 2)(5a + 2)$

III

1. The length of a rectangle is  $3x$  feet. The width is  $(4x - 5)$ . Find the area in terms of the variable  $x$ .

2. The length of a side of a square is  $(3x - 2)$ . Find the area in terms of the variable  $x$ .

3. The radius of a circle is  $(x - 2)$ . Find the area in terms of the variable  $x$ . Leave answer in terms of  $\pi$ .

## Week IX

### Scientific Notation ; Division of Polynomials

1. Write with a positive or zero exponent. Then evaluate.

a)  $3^{-2}$       b)  $4^{-3}$       c)  $\frac{1}{6^{-2}}$       d)  $\frac{2^{-3}}{2}$       e)  $\frac{5^2}{5^2}$

2. Simplify:

a)  $\frac{6x^2}{2x}$

d)  $(x^3y)^0$

b)  $\frac{-4x^2}{-x^2}$

e)  $\frac{6a^2 - 3a}{-3a}$

c)  $\frac{a^8b^6}{a^5b^2}$

f)  $\frac{14x^5 + 21x^3}{7x}$

3. Rewrite in Scientific Notation:

a) 428,000

b) 9,800,000

c) 13.85

d) .000567

e) .00000107

f) .01

4. Rewrite in Decimal Notation:

a)  $1.34 \times 10^6$

b)  $9.0876 \times 10^4$

c)  $8.123 \times 10^{-3}$

d)  $4.5 \times 10^{-4}$

