Math 120
Exam #1
Spring 2009

Show all work (and answers) on the blank paper provided. Write nothing on this paper other than your name.

Name:

1	10	
2	10	
3a	10	
3b	10	
3c	10	
4	10	
5a	10	
5b	10	
5c	10	
6a	10	
6b	10	
7	10	
8	10	
9	10	
10a	10	
10b	10	
10c	10	
11	10	
12	10	
13	10	
14	15	
15	15	
total	230	
curve		
%		

1) $A = \{2,4,5,8,11,13\}$
$B = \{-2,0,5,8,11.2,15,20\}$
Find $A \cap B$.

2) Evaluate $r^4 - 2s^3$ given that $r = -3$ and $s = -2$.

3) Add, subtract, or multiply, as indicated. Express your answer as a single polynomial:

a. $3(8p^2 - 5p) - 5(3p^2 - 2p + 4)$

b. $(5w - 6)(2w + 3)$

c. $(u - v + k)(u + 2v - 3k)$

4) Divide using long division:
$$\frac{2x^3 - 11x^2 + 28}{x - 5}$$

5) Factor completely:

a. $6x^2 - 17x + 7$

b. $15mp + 9mq - 10np - 6nq$

c. $1000x^3 + 343y^3$

6) Perform the indicated operations and simplify the result. Leave answers in factored form.

a. $\dfrac{x^2 + x}{5} \div \dfrac{xy + y}{25}$

b. $\dfrac{3k}{k^2 + k - 12} - \dfrac{k}{k^2 - 16}$

7) Simplify: $\dfrac{\frac{h}{g} + \frac{g}{h}}{1 - \frac{2}{gh}}$

8) Simplify $\dfrac{16m^{-5}n^4}{12m^3n^{-5}}$

9) Factor using the given common factor: $p^{-3/4} - 2p^{-7/4}$; $p^{-7/4}$.

10) Simplify each expression (assume variables represent positive real numbers).

a. $\sqrt{8x^5z^8}$

b. $\sqrt[15]{u^9}$

c. $\sqrt{\dfrac{2}{3y}}$

11) Rationalize the denominator of $\dfrac{\sqrt{5}}{\sqrt{3} - \sqrt{5}}$.

12) Decide whether the equation is an identity, a contradiction, or a conditional equation. Give the solution set.
$-6(x - 5) + 8(x - 6) = 2x - 18$

13) Solve for x: $ax + b^2 = bx - a^2$

14) Joe the Plumber (who isn't actually a plumber) traveled against the wind in a small plane for 3 hr. The return trip with the wind took 2.8 hr. Find the speed of the wind if the speed of the plane in still air is 180 mph.

15) In planning his retirement (before the bottom fell out of the market), Old Man McCain deposits some money at 4.5% interest, with twice as much deposited at 3.2%. Find the amount deposited at each rate if the total annual interest income is $1280.