Write your name on the cover of the test booklet and nowhere else. Failure to follow these directions will cost you 1 point. The test has 100 points (to be scaled up to 150 points) and is scheduled to take 50 minutes. Therefore, expect to spend 1 minute for every 2 points. For example, a 16-point question should take 8 minutes. I cannot allow extra time because of the class that follows our class.

Show all work and write each answer on a separate side of a sheet of paper.

1) (10 points) Find the set of rational numbers from $\{-3, -7/8, \pi, \sqrt{7}, 0, \sqrt{9}, 113, 47/59\}$.

2) (15 points) Simplify the following: $(3X+2Y)^2(X-Y) - (9X^3-4Y^2)$.

3) (10 points) Factor the following: $6X^3 - 12X^2 + 6X$.

4) (10 points) Factor the following $2(3X-Y)^2 - 7(3X-Y) + 6$.

5) (20 points) Simplify the following: $\dfrac{X^2 + 7X + 6}{X^2 + 2X - 24} \div \dfrac{X^2 - 1}{X^2 - 5X + 1}$.

6) (15 points) Simplify the following: $\dfrac{1 - \dfrac{1}{X}}{1 - \dfrac{1}{X^2}}$.

7) (10 points) Simplify the following: $\left(\dfrac{4X^{-2}Y^3}{6X^{-1}Y^6}\right)^{-2}$.

8) (10 points) Simplify the following: $\left(\dfrac{4X^3Y^{-1/2}}{9X^{-5}Y^{3/2}}\right)^{1/2}$.