

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 140 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) (12 points) Find $|7 - 12|$. Show one intermediate step. Simplify $\frac{-5}{X} - \frac{X - 15}{3X}$

2) (8 points) Simplify $[(4X^3X)^{1/2}]^{-1}$

3) (12 points) Multiply and then simplify $(X - 3)^3$

4) (10 points) Factor $5X^4 - 25X^3 - 70X^2$

5) (20 points) Simplify $\frac{X^2 + 3X - 10}{4X^2 + 40X + 100} \div \frac{X^2 - 4X + 4}{8X + 40}$

6) (20 points) Draw a line from $(-3, 2)$ to $(5, -4)$. Find the distance between those points and find the midpoint of the line.

7) (14 points) Simplify $\frac{\frac{1 - 2X}{X} + 3}{\frac{4X + 4}{X^2}}$

8) (4 points) Write 16,000,000,000,000 in scientific notation. (That is the number of dollars the government owes.) Write 0.000 000 008 in scientific notation. (That is the approximate diameter of an atom in centimeters.) **Briefly** explain how you got each answer.