

Please follow directions carefully and show all your work. There is a total of 40 points on the exam.

- (2) 1. Give an example of each of the following.
- (a) a rational number which is not an integer
 - (b) a real number which is not rational (in other words, an irrational number)
- (1) 2. Write in interval notation: $-3 \leq x < 5$
- (1) 3. True or false: $\frac{0}{8} = 0$
- (3) 4. Evaluate each of the following.
- (a) 8^0
 - (b) $8^{\frac{1}{3}}$
 - (c) 8^{-2}
- (1) 5. Write in scientific notation: 0.00000913
- (3) 6. Simplify: $\frac{x^{-3} \cdot x^7}{(x^2)^{-5}}$
- (4) 7. Factor completely: $x^{\frac{1}{2}}(x-1)^{-3} + x^{\frac{3}{2}}(x-1)^{-4}$
- (5) 8. Divide and simplify: $\frac{x^3+8}{x^2-4} \div \frac{2x+8}{2x-4}$
- (3) 9. Subtract: $\frac{3}{x^2} - \frac{4}{xy}$
- (3) 10. Rationalize the denominator: $\frac{3}{\sqrt{x-2}}$
- (3) 11. Solve for x : $5(x-8) = -2(3x-2)$
- (5) 12. Solve for x : $\sqrt{x} + 3 = x + 1$
- (2) 13. Solve for b : $A = \frac{1}{2}bh$
- (4) 14. A ball is thrown upward from ground level with an initial speed of 48 feet per second. Its equation of motion is $h = -16t^2 + 48t$, where t represents time in seconds and h represents the height of the ball above the ground. How long does it take for the ball to reach a height of 36 feet above the ground? Be sure to write your answer with the appropriate units.