HONORS Ch.1 Review#3 **NAME:** **PER:**

NO CALCULATOR!! CLEARLY SHOW ALL WORK AND SIMPLIFY ANSWERS!! NO DECIMALS!!

1. Simplify the expression by writing it as a single base. Show work for parts c and d.

a. $\dfrac{5^8}{5^2}$ b. $\left(5^8\right)^2\left(5\right)^4$

c. $\dfrac{5^{8x-7}}{5^{-2x+6}}$ d. $\left(5^{8x}\right)^2\left(5\right)^{3-x}$

2. Rationalize the denominator and simplify. Be sure to use parentheses properly when multiplying.

$$\frac{\sqrt{5}}{\sqrt{5}-\sqrt{7}}$$

3. Solve for the domain of each function.

a. f(x) = $\sqrt{6-2x}$ b. h(x) = $\dfrac{3}{x^2-50}$

c. g(x) = $\dfrac{x^2}{\sqrt{6-2x}}$ d. j(x) = $\dfrac{8x+1}{x^2-3x+2}$

4. Use the least common multiple to cancel the denominators, then combine like terms and solve for x.

$$\frac{3x}{2x^2-14x} + \frac{5}{2x} = \frac{9}{x-7}$$

5. Factor to simplify the rational expression.

$$\frac{x^2+2x-3}{25x^2-81} \div \frac{5x^2+14x-3}{5x^2+9x}$$

6. Simplify the expression and write the result in the form *a* + *bi*. Be sure to use parentheses properly in the numerator and denominator.

$$\frac{3+5i}{1-2i}$$

7. For the points (-5, 4) and (-2, 1), use a formula or graph to:

(a) find the distance between them.

(b) find the midpoint of the line segment that joins them.

8. Solve for x.

$$\sqrt{21-5x}+2=x-1$$

CHECK ANSWERS: $\dfrac{5+\sqrt{35}}{-2}$, $-\dfrac{7}{2}$, $-\dfrac{7}{5}+\dfrac{11}{5}i$, $\left(-\dfrac{7}{2},\dfrac{5}{2}\right)$, 5^{20}, 5^6, 5^{15x+3}, 5^{10x-13}, $\dfrac{x(x-1)}{(5x-9)(5x-1)}$

x≠1 and x≠2, $x \neq \pm 5\sqrt{2}$, x < 3, x ≤ 3, $3\sqrt{2}$, x = 4 is the only solution (x = -3 extraneous)