

Directions: Please answer the following questions. **Show work!!**  
Perform the indicated operation. Don't forget to list the restrictions.

1. Simplify.

a.  $i^{207}$

b.  $(9 + 2i)(3 - 5i)$

c.  $i^3(3i - 8)$

Simplify.

2.  $\frac{x^2 - 5x - 66}{4x - 28} \div \frac{x^2 - 12x + 11}{x^2 - 8x + 7}$

3.  $\frac{9}{3x - 6} - \frac{18}{x^2 + 2x - 8}$

4.  $\frac{14x^2 - 19x - 3}{49x^2 - 1}$

5.  $\frac{x^2 - 8x}{x^2 - 25} \cdot \frac{18x - 90}{4x^2 - 32x}$

Solve each equation

$$5. \frac{1}{v} + \frac{3v+12}{v^2-5v} = \frac{7v-56}{v^2-5v}$$

$$6. \frac{4}{x+6} - \frac{2}{x+4} = \frac{5x+16}{x^2+10x+24}$$

$$7. \frac{m-2}{m+2} + \frac{1}{m-2} = \frac{4}{m^2-4}$$