

SHOW ALL WORK!

1. Subtract $a^3 + 2a^2 + 9a + 1$ from $a^4 + 9a^2 - a + 2$.

$$\begin{array}{r} a^4 + 9a^2 - a + 2 \\ -(a^3 + 2a^2 + 9a + 1) \\ \hline a^4 - a^3 + 7a^2 - 10a + 1 \end{array}$$

2. Perform the indicated operation and simplify.

$$\begin{aligned} & 3(x-2) + 5(4x-1) - (7x+3) \\ & 3x - 6 + 20x - 5 - 7x - 3 \\ & 16x - 14 \end{aligned}$$

For problems 3-6, factor completely.

3. $(x^2 - 10x) - (10x + 100)$ Factor by Gr'ing
 $x(x-10) - 10(x+10)$
 $(x-10)(x-10)$

4. $7x^2 - 34x + 24$
 $(7x-6)(x-4)$

5. $25x^2 - 64y^2$ Diff. of Sq's
 $(5x-8y)(5x+8y)$

6. $x^2 + 64$ Sum of Sq's
Prime

For problems 7-8, Reduce the fraction completely.

7. $\frac{36}{90} = \frac{4}{10} = \frac{2}{5}$

8. $\frac{x^2 - 10x + 24}{x^2 - 16}$ $\frac{(x-6)(x-4)}{(x-4)(x+4)}$
 $\frac{x-6}{x+4}$

9. Multiply and reduce completely.

$$\frac{n^2 - n - 20}{9 - n^2} \cdot \frac{n - 3}{n - 5}$$

$$\frac{\cancel{(n-5)}(n+4)}{-(n+3)\cancel{(n-3)}} \cdot \frac{n-3}{n-5}$$

$$\frac{n+4}{-(n+3)}$$

10. Add and reduce completely.

$$\frac{4x}{x^2 + 12x + 32} + \frac{4}{x+4} - \frac{7}{x+8}$$

$$\frac{4x}{(x+8)(x+4)} + \frac{4}{x+4} \cdot \frac{(x+8)}{(x+8)} - \frac{7}{x+8} \cdot \frac{(x+4)}{(x+4)}$$

$$\frac{4x + 4x + 32 - 7x - 28}{(x+8)(x+4)}$$

$$\frac{\cancel{x+4}}{(x+8)\cancel{(x+4)}}$$

$$\frac{1}{x+8}$$

11. Reduce completely.

$$\frac{\frac{x}{y} - 3}{\frac{x^2}{y^2} - 9}$$

Method #1

$$\frac{\frac{x}{y} - 3}{\frac{x^2}{y^2} - 9}$$

$$\frac{\frac{x - 3y}{y}}{\frac{x^2 - 9y^2}{y^2}}$$

$$\frac{x - 3y}{y} \div \frac{x^2 - 9y^2}{y^2}$$

$$\frac{\cancel{x-3y}}{y} \cdot \frac{y^2}{(x+3y)\cancel{(x-3y)}}$$

$$\frac{y}{x+3y}$$

Method #2

$$\frac{\frac{x}{y} - 3}{\frac{x^2}{y^2} - 9} \cdot \frac{y^2}{y^2}$$

$$\frac{xy - 3y^2}{x^2 - 9y^2}$$

$$\frac{y(\cancel{x-3y})}{(x+3y)(\cancel{x-3y})}$$

$$\frac{y}{x+3y}$$