

Show all your work in the provided space.

1. Multiply and simplify:

$$\frac{3x^2 + 26x + 16}{3x^2 - 7x - 6} \cdot \frac{x^2 + 2x - 15}{2x^2 + 9x - 5}$$

2. Find $(f - g)(x)$ for the functions defined by $f(x) = 3x^2 + 8x - 2$ and $g(x) = 3x^3 + x$.

3. Divide $x^3 + 4x - 2$ by $x - 1$

4. Use the properties of logarithms to write the following expression as a single logarithm:

$$(\log x - \log y) + 4 \log z$$

5. Simplify: $2 [\sqrt{49} - 2(-4)] \div 3 \cdot 5 - 4^2$

6. Simplify: $6x \sqrt[3]{128x} + 3 \sqrt[3]{16x^4}$

7. A rectangular parking lot has a length 20 ft more than its width. Its area is 2400 ft^2 . What are the dimensions of the lot?

8. Find the *slope* of the line containing the points $(-5,2)$ and $(-1,6)$.

9. Solve:

$$\begin{aligned}3x - 2y &= 20 \\2x - 4y &= 16\end{aligned}$$

10. Solve the equation:

$$\frac{5}{6}x - \frac{5}{12} = \frac{7}{8}x + \frac{2}{3}$$