

1. Solve by factoring: $3x^2 - 13x = -4$

2. Factor completely: $108x^2 - 48$

3. Solve using the quadratic formula: $9x^2 - 7x = -2$

4. What is the remainder when $(6y^4 + 15y^3 - 28y - 6) \div (y + 2)$

5. Write the transformed equation when $f(x) = x^3$ undergoes the following transformations:
-shift right 4 -shift up 1 -vertical compression by a factor of $\frac{2}{3}$

6. Complete the end behavior statements for the polynomial: $f(x) = 17 + 3x - 5x^3$

$$f(x) \rightarrow \quad \text{as } x \rightarrow +\infty; f(x) \rightarrow \quad \text{as } x \rightarrow -\infty$$

7. Write the equation for the inverse function: $f(x) = \log_5(x + 4) - 8$

8. Find the value of x : $3^{5x-11} = 81$

9. Use the piecewise function to evaluate: $f(7) - 2f(-5)$ $f(x) = \begin{cases} -2|x+1|, & x \leq 1 \\ 3, & 1 < x < 3 \\ 6-2x, & x \geq 3 \end{cases}$

10. Find $f(g(x))$ given the functions: $f(x) = 2x^2 - 7$ and $g(x) = x - 9$