

Show all necessary steps Clearly, Neatly, and Systematically to receive full credit. Any incorrect statement will be penalized.

1. Multiply:

a) $[r - (s + t)]^2$

b) $[(u - v) - w][(u - v) + w]$

2. If a rock is dropped from a building of 576 ft high, then its distance in feet from the ground t second later is a function defined by $f(t) = -16t^2 + 576$. How long after it is dropped will it hit the ground?

3. Simplify: $\frac{(2m^3x^{-2})^{-1}(3m^{-4}x)^{-3}}{(m^2x^3)^3(m^2x^{-1})^{-5}}$.

4. Solve: $2x(11x^2 - 18) = -3x^3 + 28x$.

5. Perform indicated operation: $\frac{5x}{x^2 - 6x + 9} - \frac{2}{x^2 - 4x + 3} - \frac{1}{1 - x}$.

6. Simplify: $\frac{r^{-2} - 4s^{-2}}{3s^{-1} - 6r^{-1}}$.

7. Solve: $3x(3x + 2) - 6x = (5x + 2)^2$.

8. Perform indicated operation: $\frac{2a^3 + 3a^2 - 2a}{3a - 15} \div \frac{2a^3 - a^2}{a^2 - 3a - 10} \div \frac{3a^2 + 12a + 12}{10a - 5a^2}$.

9. The width of a rectangle is twice its length. If its width is increased by 3 in., and its length is increased by 7 in., then the area of the new rectangle is 40 in.^2 . Find the dimensions of the original rectangle. (*make sure to show in 3-steps format*)

10. Solve: $\frac{2}{t-5} = \frac{22}{2t^2-9t-5} - \frac{3}{2t+1}$.

11. Factor Completely.

a. $18p^3q + 53p^2q^2 - 35pq^3$

d. $w^2 - 10w + 25 - c^2$

b. $56m^3 - 448$

e. $2(u + v)^2 - 7(u + v) - 4$

c. $16 - n^4$

f. $32h^2 + 16h^3 - 24h^5$