



1. Simplify  $\frac{(3xy^3)^{-4}}{3x^{-6}y(x^{-5}y)^2}$  with positive exponents only.

2. Expand and simplify  $(7x + 5)(x - 11) - 3(x + 5)^2$ .

3. Simplify  $\frac{2x^2 + 9x + 10}{x^2 - 4} \cdot \frac{x^2 + 5x}{(x + 5)(x - 2)}$ .

4. Simplify  $\frac{1 - \frac{2}{x}}{3 + \frac{1}{x}}$ .

5. Rationalize the denominator and simplify the expression  $\frac{\sqrt{a}}{\sqrt{b}}$

7. Cosmodome sells 76 tickets and collects \$1458 on a certain occasion. If regular tickets cost \$23 each and student tickets cost \$18, how many of each were sold?

8. Solve for  $x$ :  $x(x + 8) = 3$ .

9. Solve for x: \_\_\_\_\_ .

10. Solve for x:  $1 + \frac{3}{x - 2} = \frac{12}{(x + 2)(x - 2)}$  .

11. Solve for x:  $9^{3x+7} = 243^{x-2}$ .

12. Solve for x:  $9^{3x+7} = 241$ .











20. a. A surveyor stands on a 30-foot high cliff directly above one bank of a river. From there, the angle of depression to the opposite bank is  $23^\circ$ . How wide is the river? Correct your answer to 4 decimal places.

b. Find the exact value of  $\csc 45^\circ \tan 60^\circ$ .

$$\begin{array}{r} \hline 4 \quad 102 \quad 130 \\ \hline \\ \hline \\ \hline \\ \hline \end{array}$$

$$\begin{array}{r} 4 \quad \overline{19} \\ 3 \\ 5 \\ 24 \\ \hline \end{array}$$

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$$\begin{array}{r} "5 \quad \overline{2,0\$} \quad 2 \quad \overline{3} \\ \% 5 \quad \& 2 \quad \& 11 \\ ' \quad - \quad \& - \end{array}$$

"0, 15\$

" 3,0\$ "5,0\$

"1, 16\$

' % 16

2.45