

5. $\frac{x^2+2x-8}{x^2+9x+20} \div \frac{16-x^2}{x^2+2x-15}$

$\div \Rightarrow$ MULT BY RECIP

A. $\frac{(x+2)(x-3)}{(4-x)(x+4)}$

B. $\frac{(x-2)(x-3)}{(x-4)(x+4)}$

C. $\frac{(x-2)(x-3)}{(4-x)(x+4)}$

D. $\frac{(x-4)(x+4)(x-2)}{(x+5)^2(x-3)}$

$\frac{(x+4)(x-2)(x+5)(x-3)}{(x+5)(x+4)(4-x)(4+x)}$

8. $\frac{2y-3}{y^2-25} - \frac{7}{5y-25}$

LCD: $5(y+5)(y-5)$

A. $\frac{3y-10}{(y+5)(y-5)}$

B. $\frac{3y+20}{5(y+5)(y-5)}$

C. $\frac{3y+4}{(y+5)(y-5)}$

D. $\frac{3y-50}{5(y+5)(y-5)}$

$\frac{5(2y-3)}{5(y+5)(y-5)} - \frac{7(y+5)}{5(y-5)(y+5)}, \frac{10y-15-7y-35}{5(y+5)(y-5)}, \frac{3y-50}{5(y+5)(y-5)}$

10. $\frac{3p}{4p^2-9} + \frac{4}{6p+9} - \frac{p}{4p-6}$
DOR GCM GCM

A. $\frac{(p-1)(p-6)}{6(2p-3)(2p+3)}$

B. $\frac{8-3p}{6(2p+3)}$

C. $\frac{3p^2-5p+12}{6(2p-3)(2p+3)}$

D. $\frac{3p-8}{6(2p-3)}$

$\frac{6 \cdot 3p}{6(2p-3)(2p+3)} + \frac{2 \cdot 4(2p-3)}{2 \cdot 3(2p+3)(2p-3)} - \frac{3 \cdot p(2p+3)}{3 \cdot 2(2p-3)(2p+3)}$ LCD: $2 \cdot 3 \cdot (2p+3)(2p-3)$

$\frac{18p + 8(2p-3) - 3p(2p+3)}{6(2p-3)(2p+3)}, \frac{18p + 16p - 24 - 6p^2 - 9p}{6(2p-3)(2p+3)}$

$\frac{-6p^2 + 25p - 24}{6(2p-3)(2p+3)}, \frac{-1(6p^2 - 25p + 24)}{6(2p-3)(2p+3)}, \frac{-1(2p-3)(3p-8)}{6(2p-3)(2p+3)}$

① SIMPLIFY NUM & DENOM

13. $\frac{x - \frac{(x^2-1)}{x}}{1 - \frac{(x-1)}{x}}$

A. $\frac{2x^2-1}{2x-1}$ B. $2x^2-1$ C. x D. 1

$$\frac{x^2 - x^2 + 1}{x} \div \frac{x - x + 1}{x} = \frac{1}{x} \cdot \frac{x}{1} = 1$$

16. $\frac{1}{x-2} = \frac{1}{x^2-4} - \frac{1}{x+2}$

A. $\{-2\}$ B. $\{-\frac{1}{2}\}$ C. $\{\frac{1}{2}\}$ D. $\emptyset$

$$\frac{(x+2)}{(x+2)(x-2)} = \frac{1}{(x-2)(x+2)} - \frac{1(x-2)}{(x+2)(x-2)}$$

$$\frac{(x+2)}{(x+2)(x-2)} = \frac{1 - (x-2)}{(x+2)(x-2)} \Rightarrow x \neq \pm 2$$

multiply both sides by $(x+2)(x-2)$

$$x+2 = 1 - x + 2$$

$$x+2 = -x+3$$

$$+x - 2 \quad +x - 2$$

$$\frac{2x}{2} = \frac{1}{2}$$

$$x = \frac{1}{2}$$

not restricted

17. When two resistors are wired in parallel, the total resistance (R_T) is determined using the formula $\frac{1}{R_T} = \frac{1}{R_1} + \frac{1}{R_2}$. Solve the formula for R_2 .

A. $R_2 = \frac{R_1 R_T}{R_1 - R_T}$

B. $R_2 = R_T - R_1$

C. $R_2 = \frac{2R_T}{R_1}$

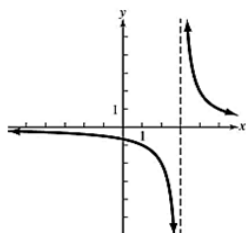
D. $R_2 = R_T R_1 - R_T - R_1$

$$\frac{1}{R_T} = \frac{1}{R_1} + \frac{1}{R_2}, \quad \frac{\overset{R_1}{\cancel{R_1}} - \overset{R_T}{\cancel{R_T}}}{\underset{R_1}{R_T} \underset{R_1}{R_1}} = \frac{1}{R_2}, \quad \overset{R_2}{\frac{R_1 - R_T}{R_T R_1}} = \frac{1}{R_2}$$

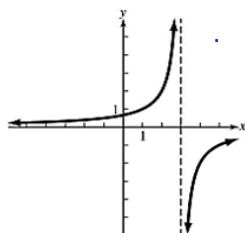
$$\left(\frac{R_T R_1}{R_1 - R_T} \right) R_2 \frac{(R_1 - R_T)}{R_T R_1} = 1 \left(\frac{R_T R_1}{R_1 - R_T} \right), \quad R_2 = \frac{R_T R_1}{R_1 - R_T}$$

18. Select the graph of the function defined by $f(x) = \frac{-2}{x-3}$.

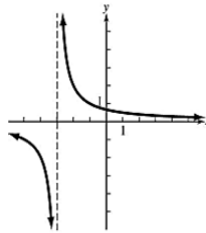
A.



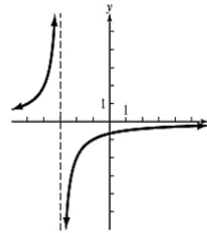
B.



C.



D.



① What domain restrictions exist?

$$x - 3 \neq 0$$

$x \neq 3 \therefore$ eliminate C & D

② $f(0) = \frac{-2}{-3} \Rightarrow f(0) > 0$ B has positive y int

Solve each problem.

19. Meghan paid \$2.70 in sales tax on an item priced \$45. Later she paid \$13.25, including the sales tax at the same rate, for a second item. What was the original price of the second item?
A. \$0.75 B. \$11.75 C. \$12.50 D. \$14.00

$$\text{Item (tax rate)} = \text{tax}$$

$$\$45 (r) = \$2.70$$

$$r = 2.7/45$$

$$r = 0.06$$

$$\text{Item (1.06)} = \text{TOTAL}$$

$$y (1.06) = 13.25$$

$$y = \$12.50$$

20. Steve can mow his lawn in 4 hours. Diane can mow the same lawn in 3 hours. How many hours will it take them to mow the lawn if they work together?

- A. $\frac{7}{4}$ hours B. $\frac{4}{7}$ hours
C. $\frac{12}{7}$ hours D. $\frac{7}{12}$ hours

$$\begin{array}{rcl} \text{Steve} & + & \text{Diane} \\ (3) \underline{1 \text{ lawn}} & + & (4) \underline{1 \text{ lawn}} \\ (3) \underline{4 \text{ hrs}} & & (4) \underline{3 \text{ hrs}} \end{array}$$

$$\frac{3 \text{ lawn} + 4 \text{ lawns}}{12 \text{ hours}} \Rightarrow \frac{7 \text{ lawns}}{12 \text{ hrs}} \text{ or } \frac{12 \text{ hrs}}{7 \text{ lawns}}$$

$$\text{then } 1 \cancel{\text{ lawn}} \cdot \frac{12 \text{ hr}}{7 \cancel{\text{ lawns}}} = \frac{12}{7} \text{ hr.}$$