

A.A.18: Multiply and divide algebraic fractions and express the product or quotient in simplest form.

1. 080826ia, P.I. A.A.18

What is the product of $\frac{4x}{x-1}$ and $\frac{x^2-1}{3x+3}$ expressed in simplest form?

[A] $\frac{4(x+1)}{3}$

[B] $\frac{4x^2}{3(x+1)}$

[C] $\frac{4x}{3}$

[D] $\frac{4x^2}{3}$

2. 060815ia, P.I. A.A.18

What is the product of $\frac{x^2-1}{x+1}$ and $\frac{x+3}{3x-3}$ expressed in simplest form?

[A] $\frac{x}{3}$ [B] $\frac{x+3}{3}$ [C] x [D] $x+3$

3. 080117b, P.I. A.A.18

If the length of a rectangular garden is represented by $\frac{x^2+2x}{x^2+2x-15}$ and its width is represented by $\frac{2x-6}{2x+4}$, which expression represents the area of the garden?

[A] $x+5$

[B] $\frac{x^2+2x}{2(x+5)}$

[C] x

[D] $\frac{x}{x+5}$

4. 060124b, P.I. A.A.18

A rectangular prism has a length of $\frac{2x^2+2x-24}{4x^2+x}$, a width of $\frac{x^2+x-6}{x+4}$, and a height of $\frac{8x^2+2x}{x^2-9}$. For all values of x for which it is defined, express, in terms of x , the volume of the prism in simplest form.

5. 010935ia, P.I. A.A.18

Perform the indicated operation and simplify:

$$\frac{3x+6}{4x+12} \div \frac{x^2-4}{x+3}$$

6. 080022a, P.I. A.A.18

Perform the indicated operation and express

the result in simplest terms: $\frac{x}{x+3} \div \frac{3x}{x^2-9}$

7. 010935a, P.I. A.A.18

Express in simplest form: $\frac{8x}{x^2-16} \div \frac{2x}{x+4}$

8. 080937ia, P.I. A.A.18

Express in simplest form:

$$\frac{2x^2-8x-42}{6x^2} \div \frac{x^2-9}{x^2-3x}$$

9. 010928b, P.I. A.A.18

Perform the indicated operations and express

in simplest form: $\frac{3x^2+12x-15}{x^2+2x-15} \div \frac{3x^2-3x}{3x-x^2}$

10. 010434b, P.I. A.A.18

Express in simplest form:

$$\frac{4x+8}{x+1} \cdot \frac{2-x}{3x-15} \div \frac{x^2-4}{2x^2-8x-10}$$

11. 010733b, P.I. A.A.18

Perform the indicated operations and simplify completely:

$$\frac{x^2-9}{x^2-5x} \cdot \frac{5x-x^2}{x^2-x-12} \div \frac{x-4}{x^2-8x+16}$$

A.A.18: Multiply and divide algebraic fractions and express the product or quotient in simplest form.

[1] C _____

[2] B _____

[3] D _____

[2] $4(x - 2)$ or $4x - 8$, and appropriate work is shown.

[1] The problem is factored correctly but not reduced to simplest form.

or [1] Only two of the expressions are factored correctly, but an appropriate answer is found.

or [1] $4(x - 2)$ or $4x - 8$, but no work is shown.

[0] Only the formula for volume is shown.

or [0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an

[4] obviously incorrect procedure.

[3] $\frac{3}{4x-8}$ or $\frac{3}{4(x-2)}$, and appropriate work is shown.

[2] Appropriate work is shown, but one computational, factoring, or simplification error is made.

[1] Appropriate work is shown, but two or more computational, factoring, or simplification errors are made.

or [1] Appropriate work is shown, but one conceptual error is made.

or [1] $\frac{3}{4x-8}$ or $\frac{3}{4(x-2)}$, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[5] incorrect procedure.

[2] $\frac{x-3}{3}$ and multiplication by the reciprocal,

correct factoring, and canceling are shown.

[1] The difference of two squares, $x^2 - 9 = (x + 3)(x - 3)$, is factored correctly.

or [1] Appropriate work is shown, but the final answer is incorrect.

or [1] $\frac{x-3}{3}$ but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.

[2] $\frac{4}{x-4}$, and appropriate work is shown.

[1] Appropriate work is shown, but one computational or factoring error is made.

or [1] Appropriate work is shown, but one conceptual error is made.

or [1] $\frac{4}{x-4}$, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[7] incorrect procedure.

[4] $\frac{x-7}{3x}$, and appropriate work is shown.

[3] Appropriate work is shown, but one computational, factoring, or simplification error is made.

[2] Appropriate work is shown, but two or more computational, factoring, or simplification errors are made.

or [2] Appropriate work is shown, but one conceptual error is made, such as not multiplying by the reciprocal.

or [2] All numerators and denominators are factored correctly, but no further correct work is shown.

[1] Appropriate work is shown, but one conceptual error and one computational, factoring, or simplification error are made.

or [1] $\frac{x-7}{3x}$, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[8] incorrect procedure.

[4] -1, and appropriate work is shown.

[3] Appropriate work is shown, but one computational, factoring, or simplification error is made.

[2] Appropriate work is shown, but two or more computational, factoring, or simplification errors are made.

or [2] Appropriate work is shown, but one conceptual error is made, such as not factoring out -1 or not multiplying by the reciprocal.

[1] Appropriate work is shown, but one conceptual error and one computational, factoring, or simplification error are made.

or [1] -1, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[9] incorrect procedure.

[6] $-\frac{8}{3}$, and appropriate work is shown.

[5] Appropriate work is shown, but one computational error is made.

[4] Appropriate work is shown, but two or more computational errors are made.

[3] Appropriate work is shown, but one conceptual error is made, such as not factoring out -1 when canceling out $2-x$.

[2] Appropriate work is shown, but one conceptual error and one computational error are made.

[1] $-\frac{8}{3}$, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[10] incorrect procedure.

[6] $-(x-3)$, $-x+3$, or $3-x$, and appropriate work is shown.

[5] Appropriate work is shown, but one computational, factoring, or simplification error is made.

[4] Appropriate work is shown, but two computational, factoring, or simplification errors are made.

or [4] $x-3$, and appropriate work is shown.

[3] Appropriate work is shown, but three or more computational, factoring, or simplification errors are made.

or [3] Appropriate work is shown, but one conceptual error is made, such as not multiplying by the multiplicative inverse.

[2] Appropriate work is shown, but one conceptual error and one computational, factoring, or simplification error are made.

[1] $-(x-3)$, $-x+3$, or $3-x$, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[11] incorrect procedure.
