

Express in simplest form: $\frac{3x+1}{x^2-1} - \frac{1}{x+1}$
 $(x+1)(x-1)$

LCD: $(x+1)(x-1)$

$$\frac{3x+1 - 1(x-1)}{(x+1)(x-1)} = \frac{3x+1-x+1}{(x+1)(x-1)}$$

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

Algebraically find the product of $(2 + 4i)$ and $(3 - i)$ in simplest $a + bi$ form.

$$(2+4i)(3-i)$$

$$6 - 2i + 12i - 4i^2$$

$$6 + 10i + 4$$

$$10 + 10i$$

For the function $f(x) = \frac{1}{5}x - \frac{3}{5}$, find $f^{-1}(x)$.

$$y = \frac{1}{5}x - \frac{3}{5}$$

$$x = \frac{1}{5}y - \frac{3}{5}$$

$$x + \frac{3}{5} = \frac{1}{5}y$$

$$5x + 3 = f^{-1}(x)$$

Which equation represents an odd function?

~~(1) $y = x^3 - 4x + 1$~~

(2) $y = \frac{x^2}{2x^2+x}$

~~(3) $y = (x+1)^3$~~

~~(4) $y = 3x + 1$~~

$$f(-x) = -f(x)$$

Symmetric through origin
 (flip upside down & get same function)

$$(x+1)(x+1)(x+1)$$

$$(x^2+2x+1)(x+1) = x^3 + x^2 + 2x^2 + 2x + x + 1$$

Calculate the average rate of change from $x = 1$ to $x = 4$ for each of the functions below.

x	1	2	3	4	5
$f(x)$	3	4	5	6	7

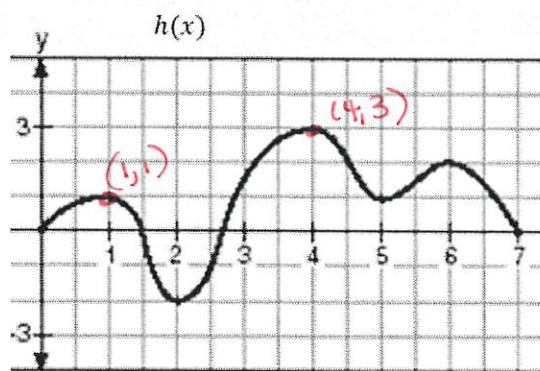
$$AROC = \frac{6-3}{4-1} = \frac{3}{3} = 1$$

$$g(x) = x^2 + 5x - 6$$

$$g(1) = 0$$

$$g(4) = 30$$

$$AROC = \frac{30-0}{4-1} = \frac{30}{3} = 10$$



$$AROC = \frac{3-1}{4-1} = \frac{2}{3}$$

Factor completely: $a^6 - a^4 - a^2 + 1$

$$a^4(a^2 - 1) - 1(a^2 - 1)$$

$$(a^4 - 1)(a^2 - 1)$$

$$(a^2 + 1)(a^2 - 1)(a + 1)(a - 1)$$

$$(a^2 + 1)(a + 1)(a - 1)(a + 1)(a - 1)$$

Express the product of $\left(\frac{1}{2}y^2 - \frac{1}{3}y\right)$ and $\left(12y + \frac{3}{5}\right)$ as a trinomial.

$$6y^3 + \frac{3}{10}y^2 - 4y^2 - \frac{1}{5}y$$

$$6y^3 - \frac{37}{10}y^2 - \frac{1}{5}y$$

Which expression has been rewritten correctly to form a true statement?

I. $(x+2)^2 + 2(x+2) - 8 = (x+6)x$

II. $x^3 + 3x^2 - 4xy^2 - 12y^2 = (x-2y)(x+3)^2$

III. $(x^2 + y^2)^2 = (x^2 - y^2)^2 + (2xy)^2$

(1) I, only

(3) I and III

(2) II, only

4) II and III

Simplify