

$$\frac{a + 2b}{2}$$

$$\frac{2(a + b)}{2}$$

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

factor out the negative one

$$\frac{2}{(x+4)(x+2)} + \frac{4}{-1(x+4)(x+3)}$$

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

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

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

$$\frac{2x + 6 - 4x - 8}{(x+3)(x+4)(x+2)}$$

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

$$\frac{-2(x+1)}{(x+3)(x+4)(x+2)}$$

you can bring the negative one out in front of the fraction.

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

Don't forget to evaluate the signs.

LCD

$$\frac{2}{x^2 - 4} - \frac{1}{-x^2 - x + 6}$$

① $x^2 - 4$ ② $-x^2 - x + 6$
 ① $x^2 - 4$ ② $-x^2 - x + 6$
 $\sqrt{x^2 - 4} = (x+2)(x-2)$ $\sqrt{-x^2 - x + 6} = -x^2 - 3x + 2x + 6$
 $\sqrt{4} = 2$ $-x(x+3) + 2(x+3)$
 $(x+3)(-x+2)$

$$\frac{2}{(x+2)(x-2)} - \frac{1}{(x+3)(-x+2)}$$

$$\frac{2}{(x+2)(x-2)} - \frac{1}{-1(x-2)(x+3)}$$

$$\frac{2}{(x+2)(x-2)} - - \frac{1}{(x-2)(x+3)}$$

$$\frac{(x+3)2}{(x+3)(x+2)(x-2)} + \frac{1(x+2)}{(x-2)(x+3)(x+2)}$$

$$\frac{2(x+3) + (x+2)}{(x+3)(x+2)(x-2)} = \frac{2x+6 + x+2}{(x+3)(x+2)(x-2)}$$

$$= \frac{3x+8}{(x+3)(x+2)(x-2)}$$

$$\begin{array}{cc} & 1 \\ & 1 \\ \hline -1 & -1 \end{array}$$

$$\begin{aligned} & \underbrace{y^2 + 2xy + x^2} \\ & \underline{y^2 - xy - xy + x^2} \\ & y(y-x) - x(y-x) \\ & \boxed{\frac{(y-x)(y-x)}{xy}} \end{aligned}$$

Pretest A #

7

$$(9x^2 + 4)^2 - 144x^2$$

The inverse operation of squaring is squaring root.

So the $\sqrt{\quad}$ cancels

out to "squared sign"

ex $\sqrt{(x)^2} = x$ $\sqrt{(x+1)^2} = (x+1)$

$$\sqrt{\frac{144x^2}{144x^2}} = 12x$$

$$\sqrt{(9x^2 + 4)^2} = (9x^2 + 4)$$

$$(9x^2 + 4)^2 - 144x^2$$

$$\sqrt{(9x^2 - 4)^2}$$

$$= (9x^2 - 4)$$

$$((9x^2 + 4) - 12x)((9x^2 + 4) + 12x)$$

$$(9x^2 + 4 - 12x)(9x^2 + 4 + 12x)$$

$$\sqrt{144x^2} = 12x$$

$$\sqrt{144} \sqrt{x^2} = 12x$$

$$(9x^2 - 12x + 4)(9x^2 + 12x + 4)$$

$$(9x^2 - 6x - 6x + 4)(9x^2 + 6x + 6x + 4)$$

$$(3x(3x - 2) - 2(3x - 2))(3x(3x + 2) + 2(3x + 2))$$

$$\rightarrow (3x - 2)(3x - 2)(3x + 2)(3x + 2)$$

+36
-6 -6
-2 -18
-2 +18
-3 12 -
3 +12 -
-4 -9
4 +9
+6 +6

$$(3x - 2)^2 (3x + 2)^2$$

$$(9x^4 + x^2)^2 - 36x^6$$