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2.7 Odds & Ends

Use the discriminant to find the value(s) of k such that the given quadratic will have only real solutions.

Ex1: $x^2+kx+3=0$

$(-\infty, -2\sqrt{3}] \cup [2\sqrt{3}, \infty)$

a=1 b=k c=3

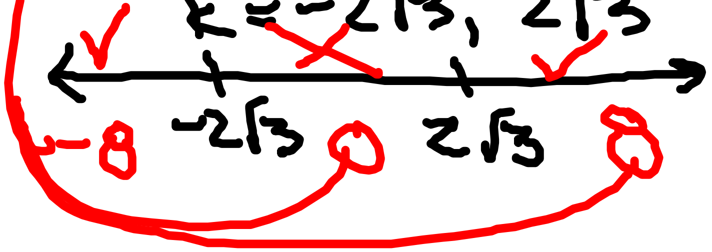
$(k)^2-4(1)(3) \geq 0$

$k^2-12 \geq 0$

C.V $k^2-12=0$

$\pm\sqrt{k^2}=\sqrt{12}$

$k=-2\sqrt{3}, 2\sqrt{3}$



Ex2: $kx^2+8x+k=0$

a=k b=8 c=k

$(8)^2-4(k)(k) \geq 0$

$64-4k^2 \geq 0$

$-4k^2+64 \geq 0$

$-4(k^2-16) \geq 0$ Pos $[-4,4]$

$-4(k+4)(k-4) \geq 0$

C.V $-4 \neq 0$ k=-4 k=4

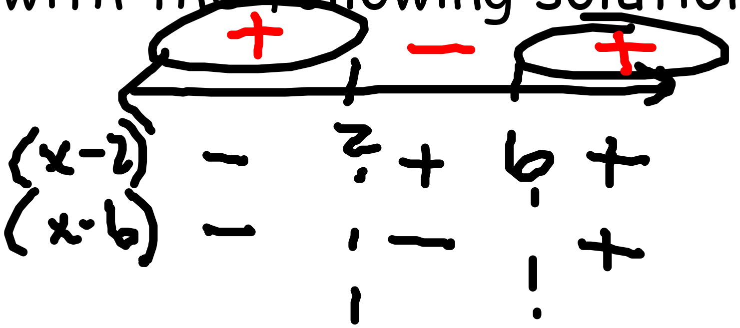
Find a quadratic inequality with the following solution.

Ex3: $(-\infty,2]\cup[6,\infty)$

C.V $x=2$ $x=6$

$(x-2)\ (x-6)$

$x^2-8x+12 \geq 0$



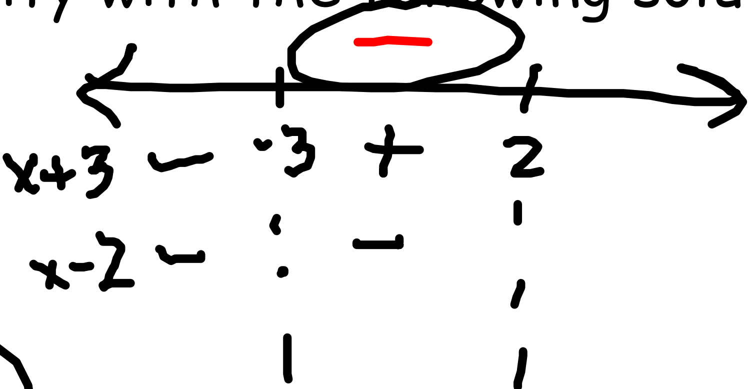
Find a rational inequality with the following solution.

Ex4: $[-3,2)$

C.V $x=-3$ $x=2$

$x+3$ $x-2$

$$\frac{x+3}{x-2} \leq 0$$



Ex5: The cost (c) to produce x chocolate bars is c=1.25x + 5000; the revenue (r) is r=1.5x. Find all of the values of the chocolate bars that must be produced to atleast break even.

atleast break even

$$r \geq c$$

$$1.5x \geq 1.25x + 5000$$

$$-1.25x \quad -1.25x$$

$$\frac{.25x}{.25} \geq \frac{5000}{.25}$$

$$x \geq 20000$$

20 000 candy bars must be sold to atleast breakeven

HW pg 147-148 25,26,60,61,71-78 all & Extra problems

Extra problems:

Use the discriminant to find the value(s) of k such that the given quadratic will have only real solutions.

1) $x^2 - kx + 8 = 0$

2) $x^2 + kx - 5 = 0$

3) $x^2 + kx + 2k = 0$

4) $kx^2 + 4x + k = 0$