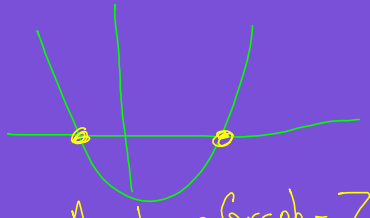
QUADRATIC FORMULA

$$ax^2+bx+c=0$$

$$x=\frac{-b\pm\sqrt{b^2-4ac}}{2a}$$

$$f_1=3x^2+4x-1$$



Menu - Analyze Graph - Zero

$$4x=-3x^2+1$$

$$3x^2+4x-1=0$$

$$a \quad b \quad c$$

$$x=\frac{-4\pm\sqrt{4^2-4(3)(-1)}}{2(3)}$$

$$x=\frac{-4\pm\sqrt{16+12}}{6}$$

$$=\frac{-4\pm\sqrt{28}}{6}$$

$$=\frac{-4\pm2\sqrt{7}}{6}$$

$$=\boxed{\frac{-2\pm\sqrt{7}}{3}}$$

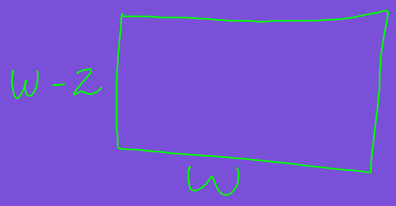
$$\frac{-2+\sqrt{7}}{3}$$

$$\frac{-2-\sqrt{7}}{3}$$

APPLICATIONS

A rectangular sheet of aluminum was folded to form a rain gutter with a 31 sq. in. rectangular cross section. If the cross section has a height that is 2 in. shorter than its width, how wide was the piece of aluminum before it was folded?

Area



$$A = l \cdot w$$
$$A = (w-2)w$$
$$31 = w^2 - 2w$$
$$0 = w^2 - 2w - 31$$
$$w = \frac{2 \pm \sqrt{4 - 4(1)(-31)}}{2(1)}$$
$$= \frac{2 \pm \sqrt{4+124}}{2} = \frac{2 \pm \sqrt{128}}{2}$$
$$\approx 4.66, -6.66$$

≈4.66 in.

A store's revenue from selling skateboards is determined by multiplying the number of skateboards by the cost per skateboard. The revenue, R, from selling x skateboards (where x is less than or equal to 50) is R = x(50 - 0.2x). How many skateboards need to be sold to have a revenue of $480?

$x \leq 50$

$R = x(50 - 0.2x)$

$480 = 50x - 0.2x^2$

$0.2x^2 - 50x + 480 = 0$

$$x = \frac{50 \pm \sqrt{2500 - 4(0.2)(480)}}{2(0.2)}$$

$x = 240 \qquad x = 10$

10 skateboards