Quadratic Equations Word Problems

1) Eight more than the square of a # is the same as 6 times the number.

Let = x = #

$(x-2)(x-4)$

{2, 4}

$x^2 + 8 = 6x$

$x^2 - 6x + 8$

2) Six times the square of a number decreased by 5 times the number equals 1. Find the POSITIVE solution.

$6x^2 - 5x = 1$

$6x^2 - 5x - 1 = 0$

$x^2 - 5x - 6$

$(6x - 6)(6x + 1)$

6

$(x - 1)(6x + 1)$

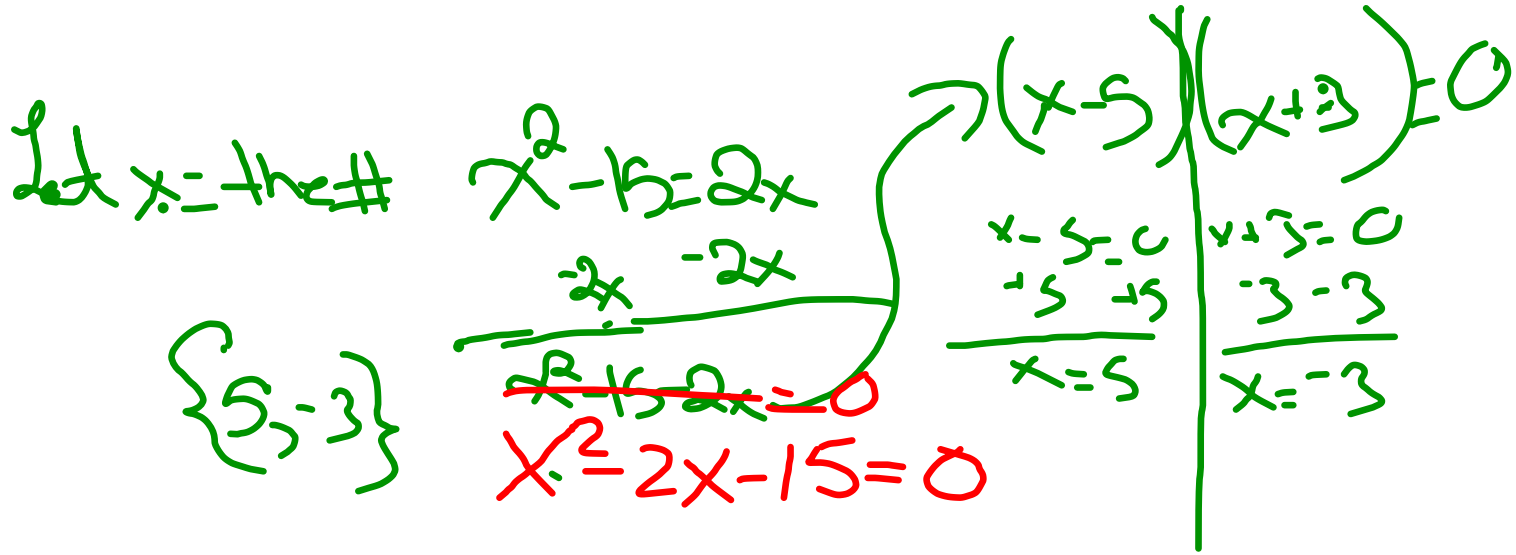
$x = 1$ $\quad x = -\frac{1}{6}$

1) $\frac{-1}{6}$

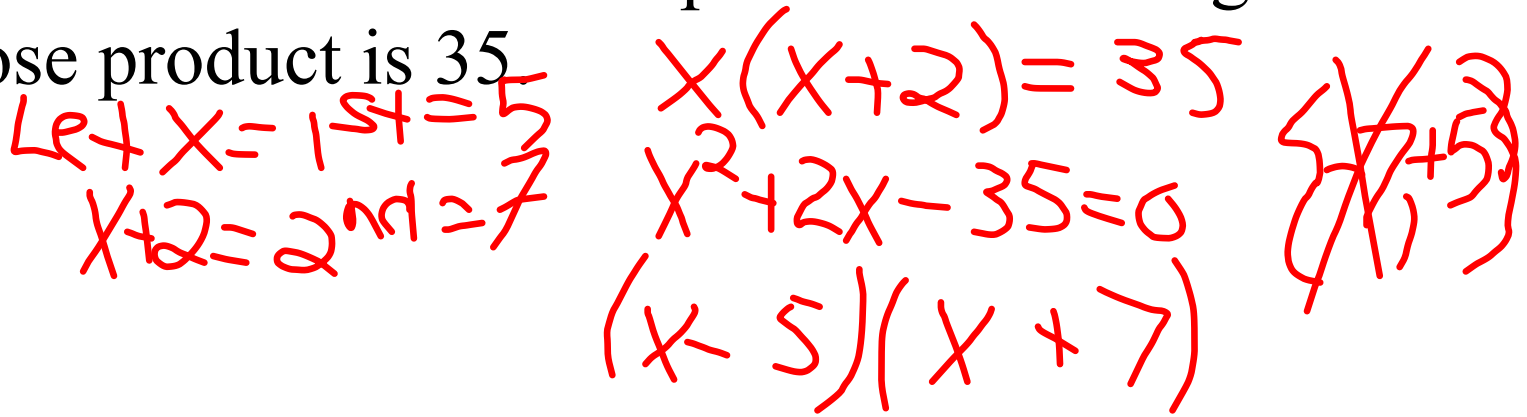
$x - 1 \quad \frac{6x}{6} + \frac{1}{6}$

$+1$

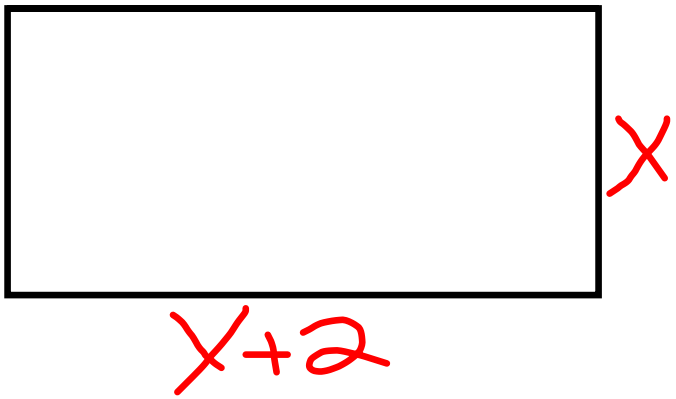
3) Fifteen less than the square of a # is the same as twice the #. Find the #.



4) Find two consecutive positive odd integers whose product is 35



5) The area of a rectangle is 99 sq. ~~inches~~ ft. The length is 2 feet longer than the width. Find the dimensions.



$99 = x(x+2)$

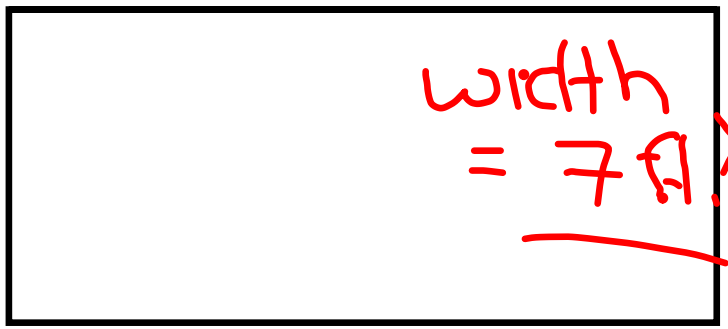
$99 = x^2 + 2x$

$-99 \quad -99$

$0 = (x+11)(x-9)$

$x = -11 \quad x = +9$

6) The length of a rectangle is 8 feet longer than the width. The area is 105 sq. feet. Find the dimensions of the rectangle.



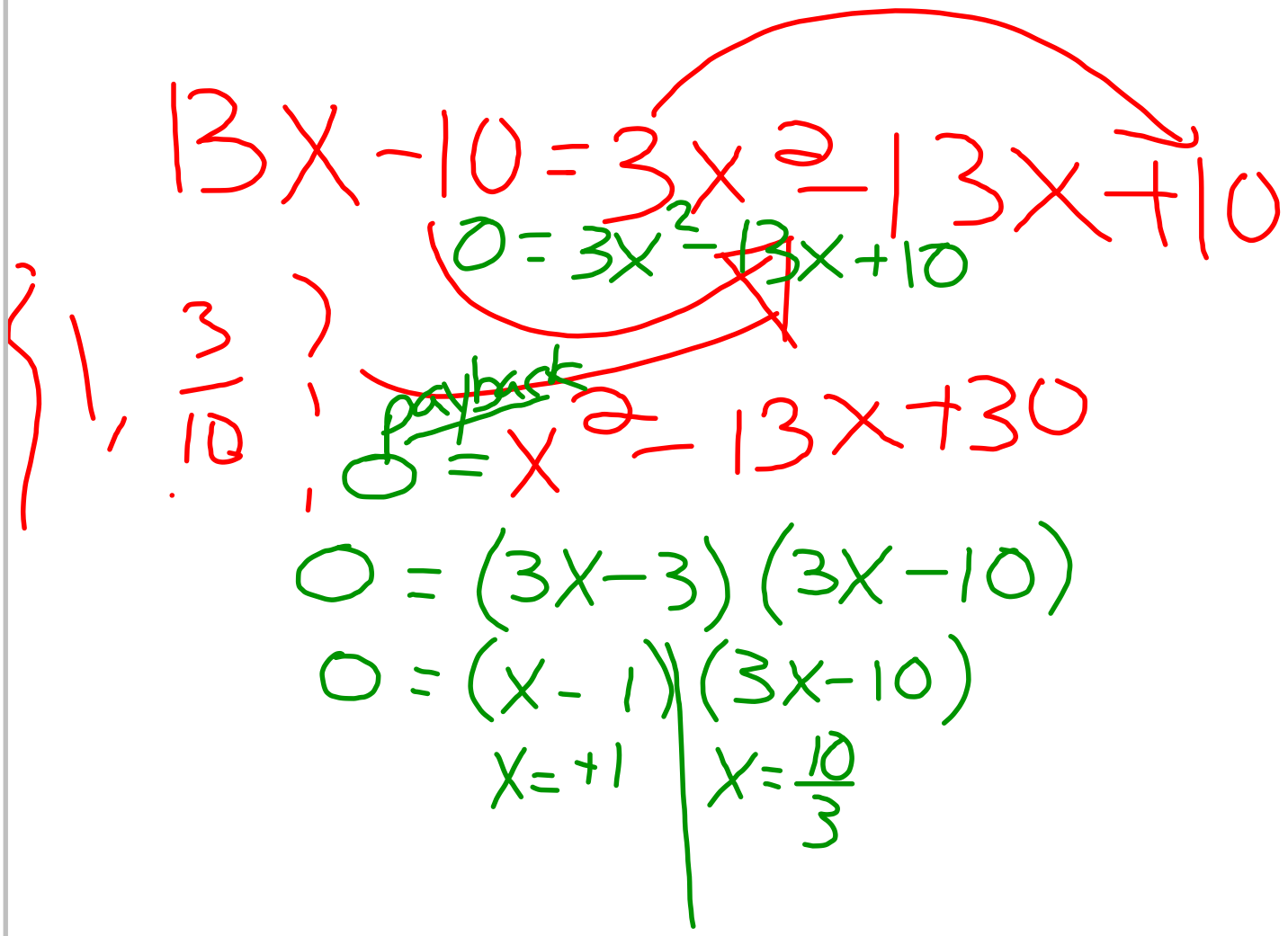
$105 = x^2 + 8x$

$0 = x^2 + 8x - 105$

$0 = (x+15)(x-7)$

$x = -15$ $\quad x = +7$

7) If -10 is added to 13 times a number, the result is triple the square of the number. Find the number.



8) $2 + \frac{5}{x} = \frac{12}{x^2}$ (x^2)

$2x^2 + 5x = 12$

$2x^2 + 5x - 12 = 0$

$(2x + 8)(2x - 3) = 0$

$(x + 4)(2x - 3) = 0$

$x = -4$ | $x = \frac{3}{2}$

Mult. all terms by LCD to eliminate all fractions.

9) The square of a # increased by 3 times the number equals 4. Find all possible solutions.

$x^2 + 3x = 4$

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

$(x + 4)(x - 1) = 0$

$x = -4$ | $x = +1$

$\{-4, +1\}$

10) The sum of the squares of two consecutive odd integers is 202. Find the integers.

x = 1st $= -9, 11$ $\quad x^2 + (x+2)^2 = 202$

$x+2$ = 2nd $= -7, 13$ $\quad x^2 + (x+2)(x+2) = 202$

$x^2 + x^2 + 4x + 4 = 202$

$2x^2 + 4x + 4 = 202$

$-202 \quad -202$

$2x^2 + 4x - 198 = 0$

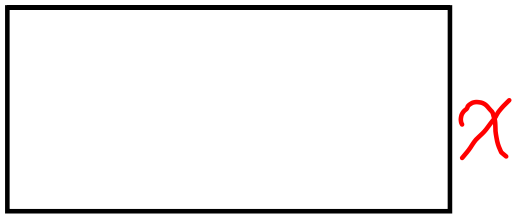
$x^2 + 2x - 99 = 0$

$(x-9)(x+11)$

11) Twice the square of an integer is 3 less than 7 times the integer. Find the integer.

$2x^2 = 7x - 3$

12) The length of a rectangle is twice the width. The area is 32 square units. Find the length and the width. (area = length x width)



x

$2x$

$x(2x) = 32$

$2x^2 - 32 = 0$

$2 \quad 2$

$x^2 - 16$

$(x-4)(x+4)$