

HOMWORK REVIEW

$$P. 28 \# 6b) \quad R = (30 - 4x)(16 + 2x)$$

Zeros

$$30 - 4x = 0$$

$$-4x = -30$$

$$x = \frac{-30}{-4}$$

$$x = 7.5$$

$$(7.5, 0)$$

$$16 + 2x = 0$$

$$2x = -16$$

$$x = -8$$

$$(-8, 0)$$

$$h = \frac{7.5 + (-8)}{2}$$

$$h = \frac{-0.5}{2} = -0.25 = -\frac{1}{4}$$

axis of symmetry $x = -0.25$

optimal value

$$R = (30 - 4(-0.25))(16 + 2(-0.25))$$

$$R = (31)(15.5)$$

$$R = \underline{\$480.50}$$

Vertex $(-0.25, 480.50)$

p. 209 # 9) factored form

$$y = a(x-s)(x-t)$$

Given info

X intercepts	y-intercept
a) -2 and 4	5

$$y = a(x+2)(x-4)$$

Sub in (0,5) and
Solve for "a"

means
(0,5)

$$5 = a(0+2)(0-4)$$

$$5 = a(2)(-4)$$

$$5 = -8a$$

$$a = \frac{5}{-8} = -\frac{5}{8}$$

$$a = -\frac{5}{8}$$

$$\therefore y = -\frac{5}{8}(x+2)(x-4)$$

direction is down
b/c "a" is negative.

3.7 apps p. 298 #8. demo.

Ex 1

$$y = \frac{-5}{8} (x+2)(x-4)$$

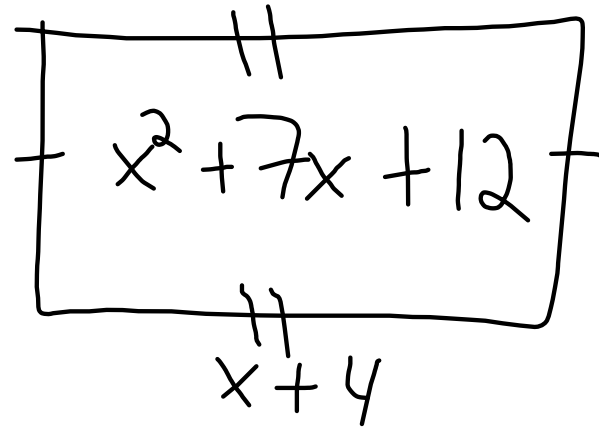
$$y = -\frac{5}{8} (x^2 - 4x + 2x - 8)$$

$$y = -\frac{5}{8} (x^2 - 2x - 8)$$

$$y = \frac{-5x^2}{8} + \frac{10x}{8} + \frac{40}{8}$$

$$y = -\frac{5x^2}{8} + \frac{5x}{4} + 5$$

p.299 #9 demo Ex.2



$$A = lw$$

$$A = x^2 + 7x + 12$$

$$A = \overbrace{(x+4)}^{\text{given}} \underbrace{(x+3)}$$

The diagram shows red arrows indicating the factoring process from the quadratic equation above. Two 'x' terms are crossed out, and arrows point from them to the 'x' terms in the factors. A '3' is written next to the 'x+3' factor, and a '4' is written next to the 'x+4' factor, representing the constant terms in the original quadratic.

\therefore the width is $x+3$

Ex. 3 p. 308 #11 Demo

$$h = -6t^2 + 36t$$

a) ground? x-axis? zeros?

$$y = -6t(t - 6)$$

$$-6t = 0$$

$$t = 0$$

$$t - 6 = 0$$

$$t = 6$$

\therefore at 0 sec. the rocket is ^{at} the ground. ^{at} 6 sec. the ground.

take-off

landing

b) max height? optimal value? k ?

$$h = \frac{0 + 6}{2} = 3$$

Vertex
 $h = 3$

axis of symmetry $x = 3$

Question

$$y = h = -6(3)^2 + 36(3)$$

$$y = h = -54 + 108$$

$$y = h = 54$$

vertex $(3, 54)$

\therefore max height is 54m.