APPLICATION PROBLEMS

We looked at the football problem last week.

Parabolas can be used to describe the trajectory of any projectile. The height of the projectile can be described as a **quadratic** function of time or a function of horizontal distance.

For application problems (word problems):

- identify variables
- summarize information
- sketch graph
- determine rule if necessary
- use rule to solve given problem

p.114 #21-25 + corrected quiz

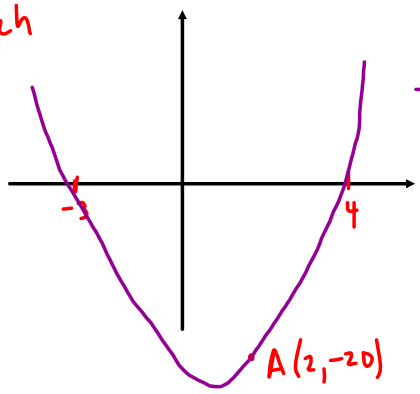
p. 111

5. zero = $-3, 4$ → factored form

point $A(2, -20)$

$f(x) = a(x - x_1)(x - x_2)$

sketch



$f(x) = a(x+3)(x-4)$

$-20 = a(2+3)(2-4)$

$-20 = a(5)(-2)$

$-20 = -10a$

$2 = a$

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

Solve $y = 16$

$16 = 2(x+3)(x-4)$

$16 = 2(x^2 - x - 12)$

$16 = 2x^2 - 2x - 24$

$0 = 2x^2 - 2x - 40$

$0 = 2(x^2 - x - 20)$

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

$x - 5 = 0$ $\qquad$ $x + 4 = 0$

$x = 5$ $\qquad$ $x = -4$

$(5, 16)$ $\qquad$ $(-4, 16)$

p. 112
#7. zeros $= -3, 4$

equation of axis of symmetry

$$x = h$$

$$h = \frac{x_1 + x_2}{2} = \frac{-3+4}{2} = \frac{1}{2}$$

$$\boxed{x = \frac{1}{2}}$$