4) How many tickets will be sold and what is the ticket price when the revenue is max?

Ticket price = $30 + $10 = $40

Tickets sold = 500 - 10(10) = 400

FACTOR PERFECT SQUARE TRINOMIALS

ex. $p^2 + 10p + 25$

$= (p+5)(p+5)$

$= (p+5)^2$

ex. $p^2 - 8p + 16$

$= (p-4)(p-4)$

$= (p-4)^2$

FACTOR DIFFERENCE OF SQUARES

ex. $x^2 - 36$

$= (x+6)(x-6)$

ex. $81 - x^2$

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

When does something land? zeros

Max/min vertex

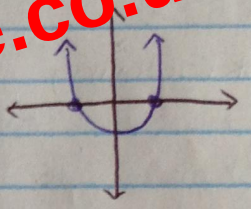
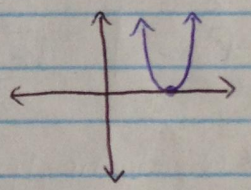
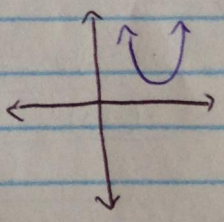
Break-even price zeros (when revenue = 0)

Starting height of a projectile y-int

WORD PROBLEMS

1) Path of a Projectile
2) Numbers
3) Revenue & Money
4) Measurements (Area & Perimeter)
5) Framing

NATURE OF ROOTS

RELATION	ROOTS CALCULATED	QUANTITY (UNDER SQUARE ROOT $b-4ac$)	SKETCH OF GRAPH	NUMBER OF ZEROS
$y = x^2 + 2x - 9$	$x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$ $x = \frac{-2 \pm \sqrt{2^2-4(1)(-9)}}{2(1)}$ $x = \frac{-2 \pm \sqrt{4+36}}{2}$ $x = \frac{-2 \pm \sqrt{40}}{2}$	+		2
$y = 2x^2 - 12x + 18$	$x = \frac{-(-12) \pm \sqrt{(-12)^2-4(2)(18)}}{2(2)}$ $x = \frac{12 \pm \sqrt{144-144}}{4}$ $x = \frac{12 \pm \sqrt{0}}{4}$ $x = 3$	0		1
$y = 3x^2 + 4$	$x = \frac{-0 \pm \sqrt{0^2-4(3)(4)}}{2(3)}$ $x = \frac{0 \pm \sqrt{-48}}{6}$	−		0

The expression under the radical sign (b^2-4ac) is called the discriminant

If $b^2-4ac > 0$, there are two real roots

If $b^2-4ac = 0$, there are one real/two equal roots

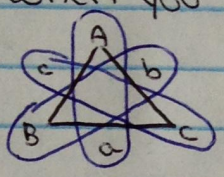
If $b^2-4ac < 0$, there are no real/2 imaginary roots

⑧ SINE LAW & COSINE LAW

SINE LAW : $\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$

$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

- use it when you are given an angle side pair



COSINE LAW : $a^2 = b^2 + c^2 - 2bc\cos A$ (find side)

$$\cos A = \frac{b^2 + c^2 - a^2}{2bc}$$ (find angle)

- use it when you are given two sides and the contained angle or three sides

SUMMARY

Sine Law

- Find a side when given: angle side pair + another angle
- Find an angle when given: angle side pair + another side

Cosine Law

- Find a side when given: two sides + contained angle
- Find an angle when given: three sides

Primary Trig. Ratios (SOH-CAH-TOA) *must be a right triangle*

- Find a side when given: 90° angle + angle + side
- Find an angle when given: 90° angle + 2 sides