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Restrictions: Set underneath
root ≥ 0 and solve.

Quadratics
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Calculator 2nd Calc

Solving $x-intercepts$ $y = 0$ $(x, 0)$
Get = 0. Factor
$0 = (x + 2)(2x + 3)$
$Set\ brackets = 0\ seperately\ and\ solve$
$x + 2 = 0$ $2x + 3 = 0$
$x = -2$ $x = \frac{-3}{2}$

$$(a)(b) = 0$$
$$(a) = 0 \quad (b) = 0$$

Square Root Method $\sqrt{(x+2)^2} = \pm\sqrt{5}$

Quadratic Formula

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

$\boldsymbol{Discriminant: b^2 - 4ac}$
Case 1: $b^2 - 4ac > 0$ $Two\ x-ints$
Case 2: $b^2 - 4ac < 0$ $No\ x-int$
Case 3: $b^2 - 4ac = 0$ $One\ x-int$

Systems
$y_1 = y_2$ $Find\ Intersection$
OR
$y_1 \pm y_2 = 0$ $Find\ x-intercepts$
$y_3 = 0$ $y_1 \pm y_2 = y_3$

Inequalities
One Variable - Number Line
Two Variables Shading
Test Point(s)
Linear
Quadratic

Absolute Value
Isolate Absolute Value
+" case: distribute a + into absolute value
"−" case: distribute a − into absolute value
$|x| = -3$ Impossible, no solution.

$y = +case\ LHS, y = -case\ LHS, y = RHS$

Piecewise function:

$$y = \begin{cases} \text{"+" case, Domain} & Set\ absolute\ value \geq 0\ and\ solve \\ \text{"−" case, Domain} & Set\ absolute\ value < 0\ and\ solve \end{cases}$$

Reciprocals
Restrictions: Set Denominator $\neq 0\ and\ solve$
Domain: $x \neq Restrictions$
VA: $x = Restrictions$
$Invariant\ points: set\ denominator = \pm 1\ and\ solve$
Intersection of Original Graph-Line $y = \pm 1$

Rationals
Do to top/Do to bottom
Multiply tops/bottoms
Flip and Multiply
Adding Subtracting LCD
Multiply LDC
Do to one/Do to all
Solving
State Restrictions
Check answer.

Trigonometry
ASTC/Unit Circle
Special Triangles
$\theta_r = \sin^{-1}(+)$
$\theta_{stp}, \theta_{cot}, \theta_p$
Sine/Cos Law
ASS Ambiguous

θ_{stp}

We only sin, cos or tan reference angles.
We never sin, cos or tan angles in standard position.
ASTC determines all positives and negatives.

C11 - Remember

Radicals
Laws

General

Check Answer

Inequalities
Laws

Radicals

$\sqrt{x+4} \neq \sqrt{x} + \sqrt{4}$

$\sqrt{3^2+4^2} \neq 3+4=7$

$\sqrt{a^2+b^2} \neq a+b$

$\sqrt{3^2+4^2} = \sqrt{9+16} = \sqrt{25} = 5$

$x^2 \geq 9$
$\sqrt{x^2} \geq \pm\sqrt{9}$
$x \geq +3 \quad x \leq -3$

$x^2 \leq 9$
$\sqrt{x^2} \leq \pm\sqrt{9}$
$x \leq +3 \quad x \geq -3$
$-3 \leq x \leq 3$

When you FOIL a conjugate you only have to do F & L (because O & I cancel)

Absolute Values
" + " $Case$
" − " $Case$
$Piecewise$

Reciprocals
VAs NPVs
IPs

Quadratics $y = f(x)$

$x^2 = 9$
$x^2 - 9 = 0$
$(x-3)(x+3) = 0$
$x = 3, \quad x = -3$

$x^2 = 9$
$\sqrt{x^2} = \pm\sqrt{9}$
$x = \pm 3$

$\pm; Plus/Minus$

Sequences Series
Formulas
Blanks $t_n, n =, d, r$

Solving

$-a-b = -(a+b)$

$-a+b = -(a-b)$

Be aware of negatives in front of brackets.

Systems
$(x, y), (x, y)$

Rationals
Restrictions
Invariant points $(x, \pm 1)$

Trigonometry
ASTC
Unit Circle
SOHCAHTOA
We only inverse (find angle) sin, cos or tan using Positive (+) reference angles.
$\theta_r \; is \; always \; positive, between \; 0^o \; and \; 90^o$
Substitution
Special Triangles
Calculator
Systems $y_1 = y_2 \; or \; y_1 \pm y_2 = 0$

Common Mistakes ***Corrections***

$\frac{\cancel{4}+3}{\cancel{4}} \neq 1+3=4$ $\quad \frac{4+3}{4} = \frac{4}{4} + \frac{3}{4} = 1 + \frac{3}{4} = 1.75$ Separate Fractions

$\frac{\cancel{x}+a}{\cancel{x}} \neq 1+a$ $\quad \frac{x+a}{x} = \frac{x}{x} + \frac{a}{x} = 1 + \frac{a}{x}$ *Separate Fractions*

$\frac{1}{\cancel{2}} + \frac{x}{\cancel{2}} \neq 1+x$ $\quad \frac{1}{2} + \frac{x}{2} = \frac{3}{2}$

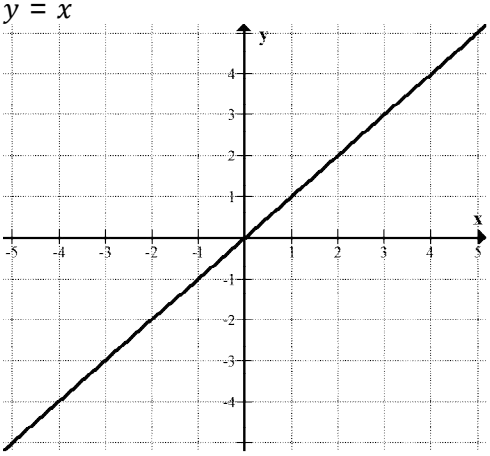
$-\frac{x+1}{2} = \frac{-x-1}{2}$

C11 - General Graphs

Linear

$y = mx + b$

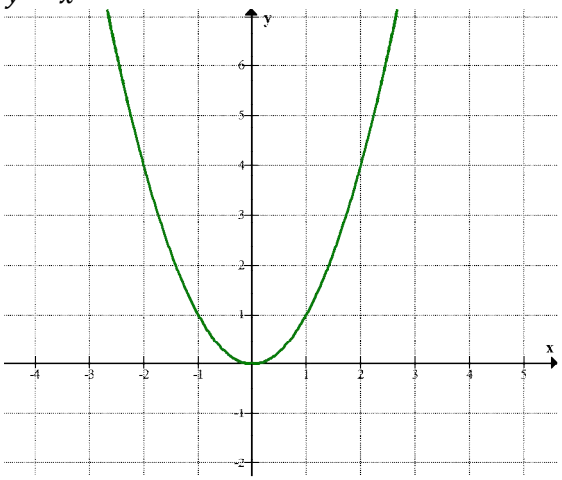
$y = x$



Quadratic

$y = a(x - h)^2 + k$

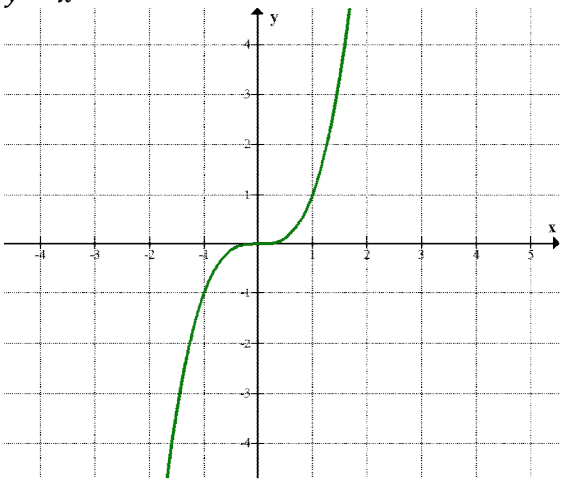
$y = x^2$



Polynomial

$y = ax^3 + bx^2 + cx + d$

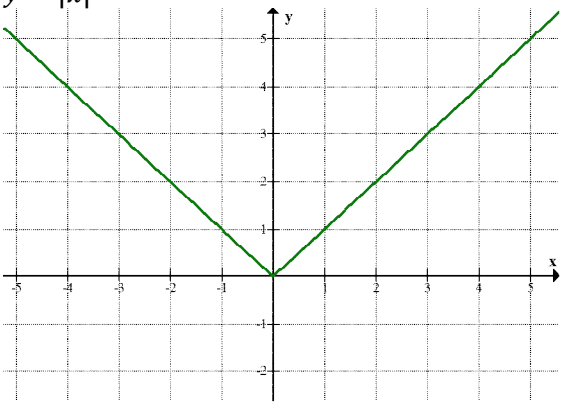
$y = x^3$



Absolute Value

$y = a|b(x - h)| + k$

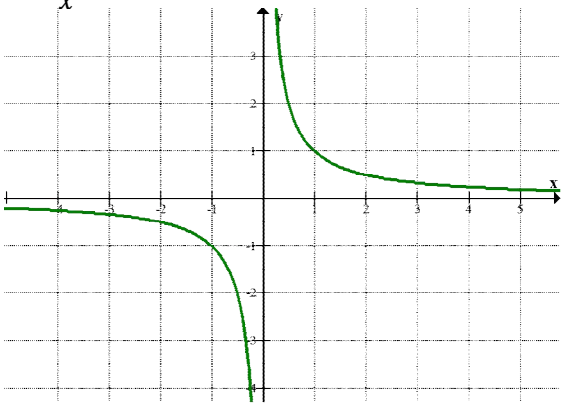
$y = |x|$



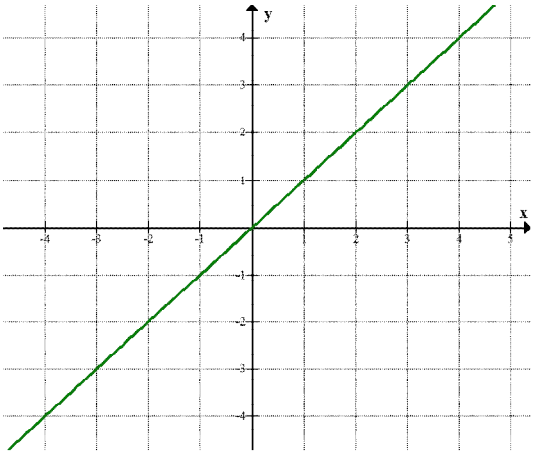
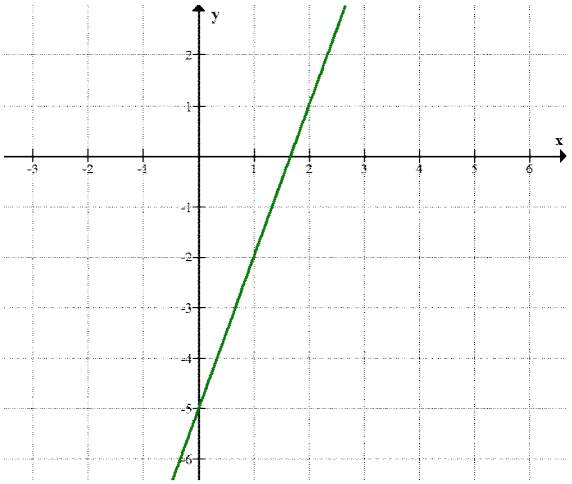
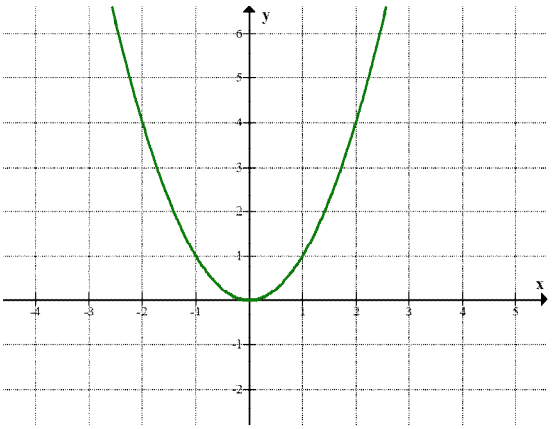
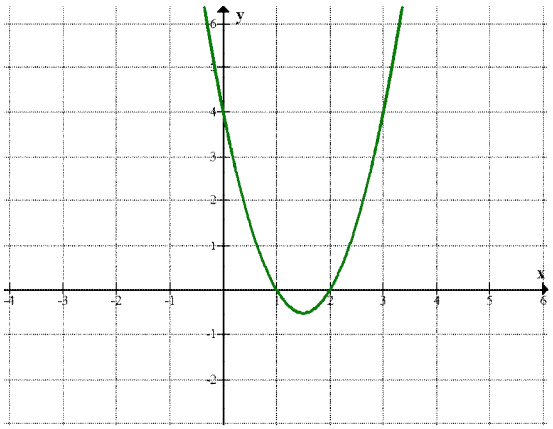
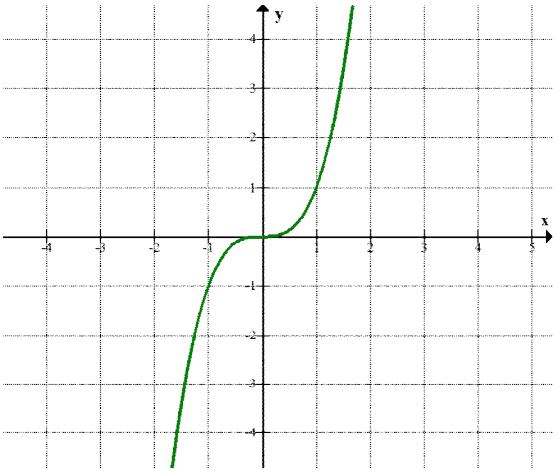
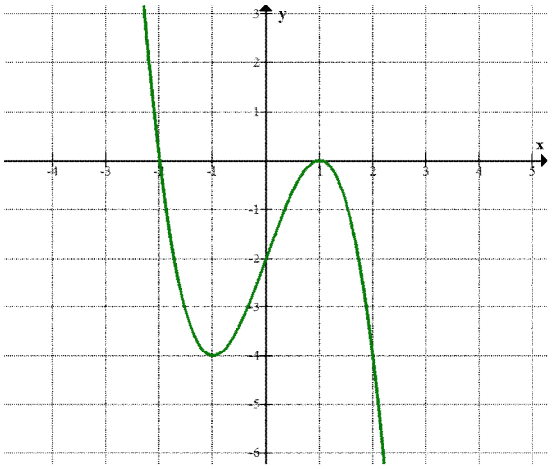
Reciprocals

$y = \left(\frac{a}{x - h}\right) + k$

$y = \frac{1}{x}$

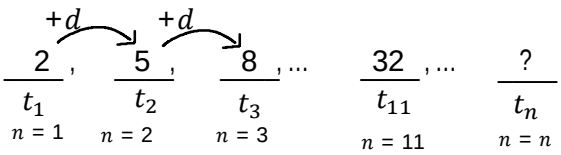


C11 - General Equations

General Equation	$y = af\big(b(x-h)\big) + k$	Example
Linear	$y = mx + b\ (y = x)$ 	$y = 3x - 5$ 
Quadratic	$y = ax^2 + bx + c\ \ (y = x^2)$ 	$y = 2x^2 - 6x + 4$ 
Polynomial (3rd degree)	$y = ax^3 + bx^2 + cx + d\ (y = x^3)$ 	$y = -x^3 + 3x - 2$ 

C11 - 1.0 - Sequences and Series Review

Arithmetic



$t_1 = first\ term\ (aka: \text{"a"})$
$d = common\ difference$
$t_n = term\ n$
$n = Term\ \#, or\ number\ of\ terms$

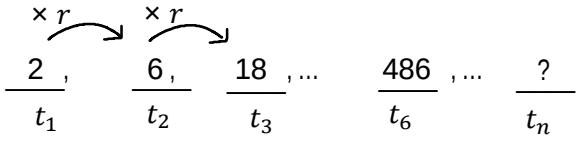
$t_n = t_1 + (n-1)d$ General Term Formula $d = t_n - t_{n-1}$ $t_n = t_m + (n-m)d$ *Difficult

$s_n = \frac{n}{2}(t_1 + t_n)$ If "n" and t_n is known. If you substitute the general formula into this formula, you get the one below.

$s_n = \frac{n}{2}(2t_1 + (n-1)d)$ If n is known.

Note: $a = t_1$

Geometric



$r = common\ ratio$

$t_n = t_1 r^{n-1}$ General Term Formula $r = \frac{t_n}{t_{n-1}}$ $t_n r^{m-n} = t_m$ $r^{m-n} = \frac{t_m}{t_n}$ *Difficult

$s_n = \frac{t_1(1-r^n)}{1-r}$ If n is known.

$t_n = s_n - s_{n-1}$

$s_n = \frac{t_1 - rt_n}{1-r}$ If t_n is known. If you substitute the general formula into this formula, you get the one above.

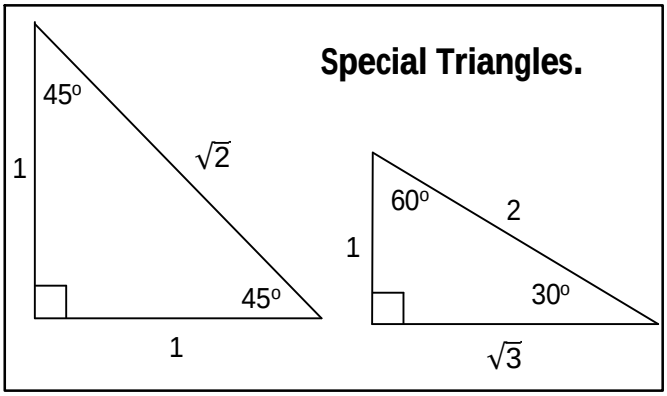
$s_\infty = \frac{t_1}{1-r}$

$-1 < r < 1$ ∴ Convergent ∴ Has sum

$|r| > 1$ ∴ Divergent ∴ No sum
OR
$r > 1$
$r < -1$

C11 - 2.0 - Trigonometry Review

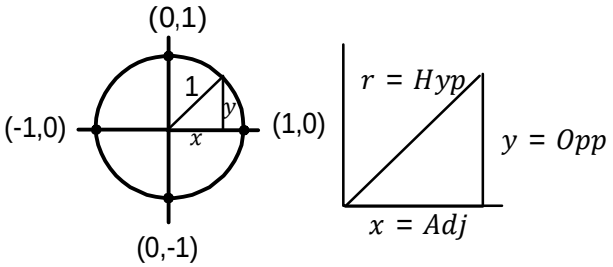
Special Triangles.



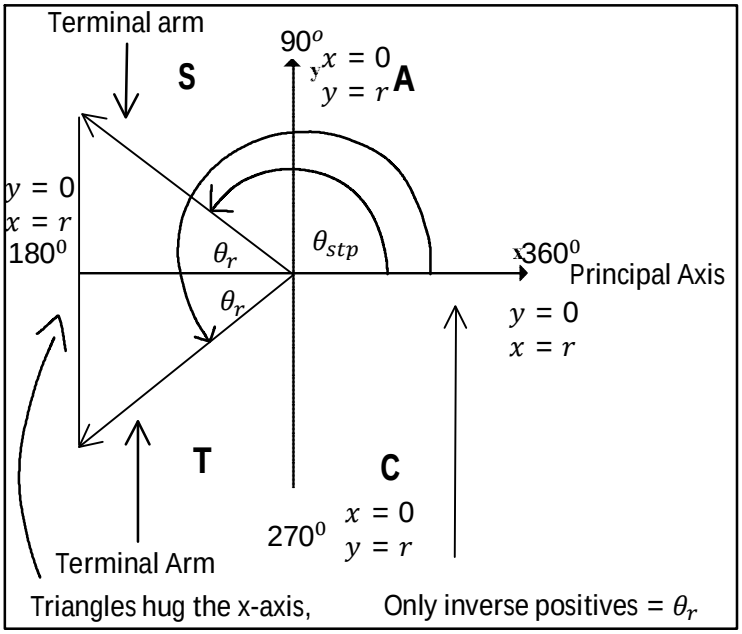
SOH - CAH - TOA

$sin\theta = \frac{O}{H}$ $cos\theta = \frac{A}{H}$ $tan\theta = \frac{O}{A}$

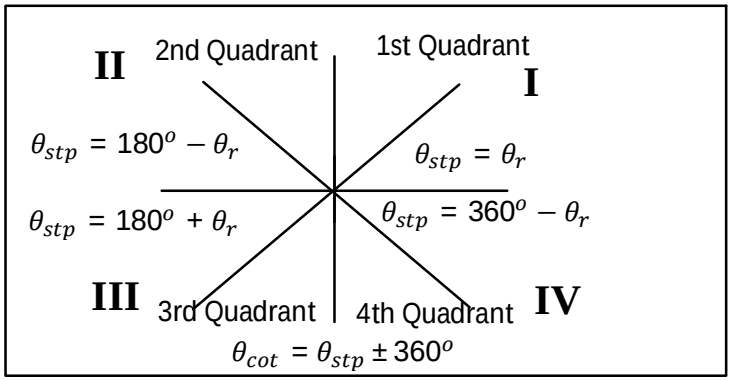
$\theta = \sin^{-1}(+\frac{O}{H})$ $tan\theta = \frac{sin\theta}{cos\theta}$



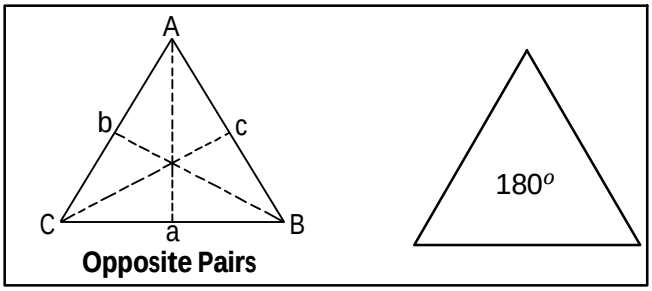
$sin\theta = y$ $cos\theta = x$ $tan\theta = \frac{y}{x}$



Triangles hug the x-axis, Only inverse positives = θ_r



$\theta_{cot} = \theta_{stp} \pm 360^o$



Opposite Pairs

Sine Law: $\frac{a}{sinA} = \frac{b}{sinB} = \frac{c}{sinC}$ or $\frac{sinA}{a} = \frac{sinB}{b} = \frac{sinC}{c}$

(to find side) (to find angle)

Put what you are looking for on top.

Sine Law: Opposite pair and one other piece of information
Ambiguous Case: ASS
Four acute cases, two obtuse cases.

Period

$p = \frac{360^0}{b}$ (sin, cos) $p = \frac{180^o}{b}$ (tan)

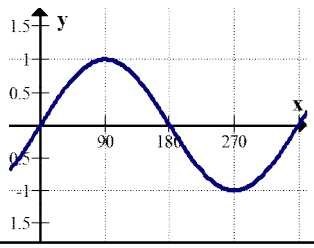
General Solution: $\theta = \theta_{stp} \pm pn, n \in I$

Cosine Law: Find smallest Angle First.

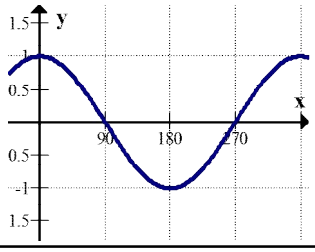
$c^2 = a^2 + b^2 - 2abcosC$

Notice: This pattern should occur.
Cosine Law: SSS (hard) and SAS (easy)

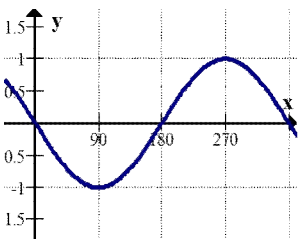
Sine Graph $y = sinx$



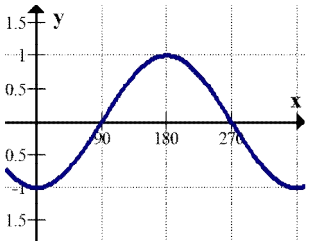
Cosine Graph $y = cosx$



$y = -sinx$



$y = -cosx$



C11 - 2.6 - Ambiguous Case of Sine (ASS) Review

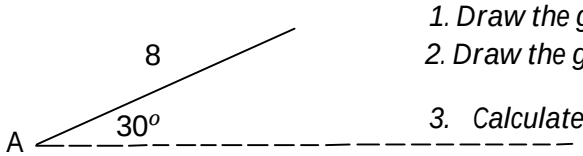
Acute Triangle

Steps

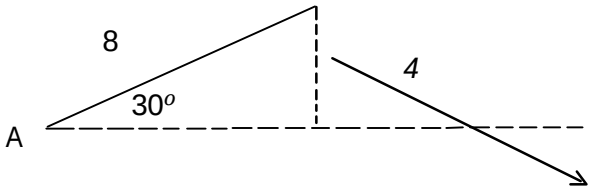
1. Draw the given angle as seen on left.

2. Draw the given side, going up (not opposite the angle).

3. Calculate the height of the triangle



$\sin\theta = \frac{\text{Opp}}{\text{Hyp}}$ $\quad a = H\sin\theta$



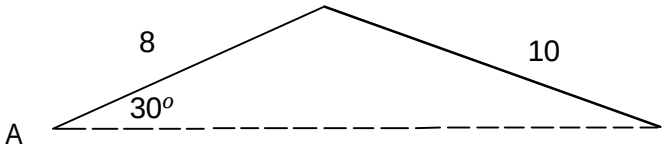
$\sin 30^o = \frac{Opp}{8}$

$8\sin 30^o = Opp$

$Opp = 4$

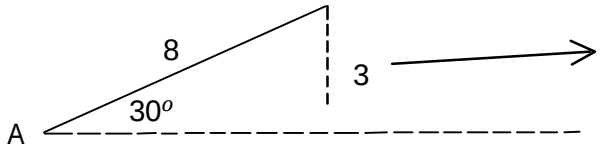
$a = 4$ $\quad a = Height$

one triangle



$a > 8$ $\quad a > b$

one triangle

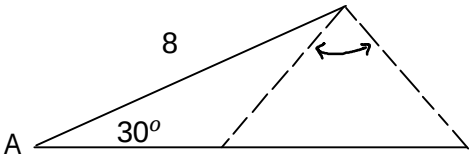


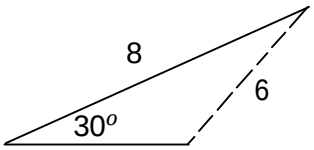
$a < 4$ $\quad a < H$

no triangle

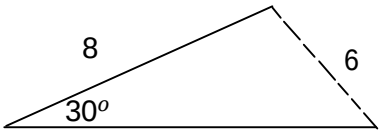
$4 < a < 8$ $\quad H < a < B$

Two triangles





or

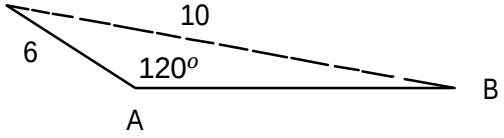


Notice: Both triangles have an angle of 30^o, a side going up of 8, and a side opposite to 30^o of 6. Notice the isosceles triangle.

Obtuse Triangle

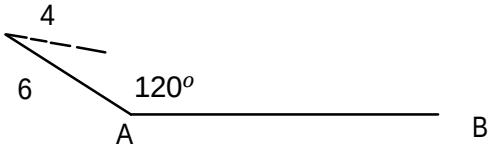
$a > b$

One triangle



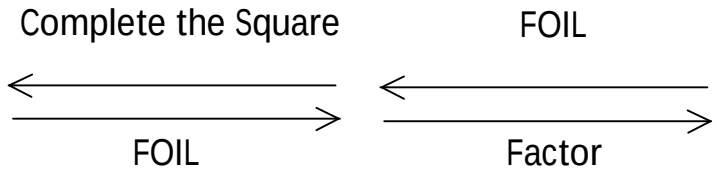
$a < b$

No triangle



In either the acute or obtuse triangles, we want to treat the opposite side to the angle like a door on a hinge that can swing accordingly.

C11 - 3.0 - Graphing Quadratics Review



	Vertex Form	Standard Form	Factored Form
General Equation:	$y = a(x-p)^2 + q$	$y = ax^2 + bx + c$	$y = a(x-z)(x-r)$
Vertex (V):	(p, q) $*\ p\ is\ opposite$	$\left(-\frac{b}{2a}, y\right)$	$\left(\frac{z+r}{2}, y\right)$
Axis of Symmetry (AOS):	$x = p$	$x = -\frac{b}{2a}$	$x = \frac{z+r}{2}$
Domain:	$x \in R$	$x \in R$	$x \in R$
X intercepts:	$set\ y = 0, and\ solve$	$set\ y = 0, and\ solve$	$Set\ brackets\ separately\ equal\ to\ zero, and\ solve$ $(x-z) = 0 \mid (x-r) = 0$ $x = z \mid \quad x = r$
Y intercepts:	$set\ x = 0, and\ solve$	$y-int$: $(0, c)$	$set\ x = 0, and\ solve$

Remember: The "p" value is the opposite of the value inside the brackets with x.

a			Range	Max/Min Value
$a > 0$: Minimum (a is positive)	Opens Up		$y \geq min$	$y = min$
$a < 0$: Maximum (a is negative)	Opens down		$y \leq max$	$y = max$
$a > 1$ or $a < -1$	Vertical Expansion		$a = 2$	
$-1 < a < 1$	Vertical Compression		$a = 0.5$	

C11 - 3/4/8 - Calculator Buttons

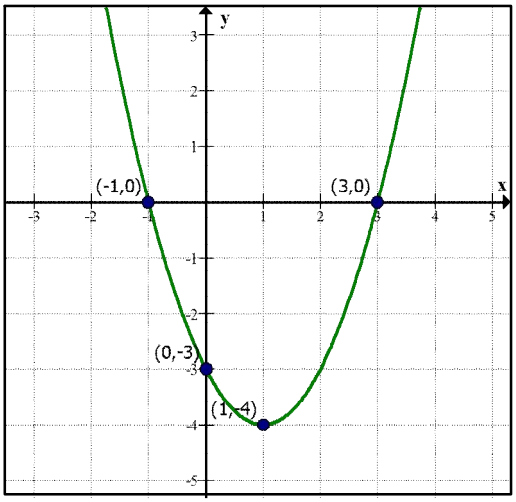
Use a graphing calculator to graph the following. Find the Vertex, Max/Min, intercepts, intersects.

GRAPH: [y =] $y = x^2 - 2x - 3$ Always (CLEAR) If Y = is not empty

[ZOOM] · (6) If can't see parabola, or change window.

VERTEX: (2ND) [CALC] [TRACE] (3 Minimum) If opens upward

(2ND) [CALC] [TRACE] (4 Maximum) If opens downward



Left Bound? (〈) Move barely left of vertex · (ENTER)

Right Bound? (〉) Move barely right of vertex · (ENTER)

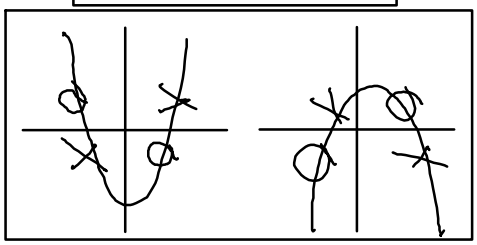
Guess? (ENTER) (Vertex: $(1, -4)$)

y- INTERCEPT: (2ND) [CALC] [TRACE] (1 Value)

X = ? (0) (ENTER) Y = -3 (y − int: $(0, -3)$)

Or $y_2 = 0$ *and find intersections*

x- INTERCEPT: (2ND) [CALC] [TRACE] (2 Zero)



Left Bound? (〈) Move barely left of x-int · (ENTER)

Right Bound? (〉) Move barely right of x-int · (ENTER)

Guess? (ENTER) (x − intercept: $(-1, 0)$) (x − intercept: $(3, 0)$)

INTERSECTION: Graph two equations: [y =] $y = x - 1$ [y =] $y = 2x^2 + 3x - 5$

Find intersection: (2ND) [CALC] [TRACE] (5 Intersection)

Using (〉) and (〈) go near an intersection

First Curve? (ENTER)

Second Curve? (ENTER)

Guess? (ENTER) (Intersection: $(1,0)$) **REPEAT** (Intersection: $(-2, -3)$)

C11 - 4.0 - Solving Quadratics for x-intercepts Review

1) *Factoring*: $y = bx + c$ **Remove Greatest Common Factor "GCF."**

$y = 12x^2 + 8x$
$y = 4x(3x + 2)$
$0 = (4x)(3x + 2)$

Set $y = 0$

$4x = 0$ $\quad$ $3x + 2 = 0$

Set brackets equal to zero "0"

$x = 0$ $\quad$ $x = \frac{-2}{3}$

Solve

$(a)(b) = 0$
$a = 0$ $\quad$ $b = 0$

---

2) *Factoring*: $y = ax^2 + bx + c$ **a = 1**

y = $x^2 + 5x + 6$
$y = (x + 2)(x + 3)$
$0 = (x + 2)(x + 3)$

Factor
set $y = 0$

$x + 3 = 0$ $\quad$ $x + 2 = 0$

Set brackets equal to zero "0"

$x = -3$ $\quad$ $x = -2$

Solve

2 X 3 = ~~c~~ 6 $\quad$ 1,2,3,6

2 + 3 = ~~b~~ 5

---

3) *Factoring*: $y = ax^2 + bx + c$ **a ≠ 1**

$y = 2x^2 + 7x + 6$
$y = 2x^2 + 3x + 4x + 6$
$y = (2x^2 + 3x)|(+4x + 6)$
$y = x(2x + 3) + 2(2x + 3)$
$y = (x + 2)(2x + 3)$

Decompose
Group
GCF
Switch
Set $y = 0$

Set brackets equal to zero "0"

Solve

$x + 2 = 0$ $\quad$ $2x + 3 = 0$

$x = -2$ $\quad$ $x = \frac{-3}{2}$

3 X 4 = ~~ac~~ 12

3 + 4 = ~~b~~ 7

---

4) *Factoring*: $y = a^2 - b^2$ **Differences of Squares**

$y = x^2 - 9$
$y = (x + 3)(x - 3)$
$0 = (x + 3)(x - 3)$

Factor
Set $y = 0$

$x + 3 = 0$ $\quad$ $x - 3 = 0$

Set brackets equal to zero "0"

Solve

$x = -3$ $\quad$ $x = 3$

---

5) *Factoring*: y = $ax^2 + bx + c$

$y = 2x^2 + 6x + 4$

$x_{int} = \frac{-(6) \pm \sqrt{(6)^2 - 4(2)(4)}}{2(2)}$

Quadratic Formula: $x_{int} = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ $\quad$ ***Discriminant*: $b^2 - 4ac$**

$x_{int} = \frac{-6 + \sqrt{4}}{4}$ $\quad$ $x_{int} = \frac{-6 - \sqrt{4}}{4}$

One **Posititve** *Equation, One* ***Negative*** *Equation*

$x_{int} = \frac{-6 + 2}{4}$ $\quad$ $x_{int} = \frac{-6 - 2}{4}$

Solve

$x_{int} = -1$ $\quad$ $x_{int} = -2$

---

6) *Factoring*: $y = a(x - p)^2 + q$

$y = 2(x - 2)^2 - 2$
$0 = 2(x - 2)^2 - 2$
$2 = 2(x - 2)^2$
$1 = (x - 2)^2$
$\pm\sqrt{1} = \sqrt{(x - 2)^2}$
$\pm 1 = (x - 2)$
$\pm 1 + 2 = x$

Solve using the ***Square Root Method***

set $y = 0$

Square root both sides of the equation

One **Posititve** *Equation, One* ***Negative*** *Equation*

Solve

$x = +1 + 2$ $\quad$ $x = -1 + 2$

$x = 3$ $\quad$ $x = 1$

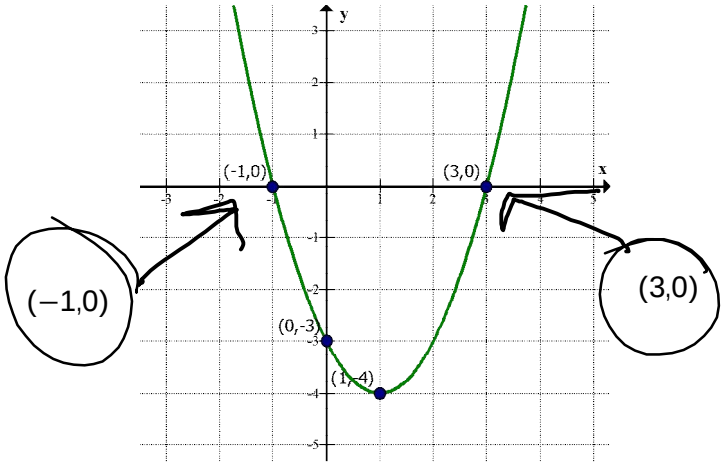
C11 - 4.0 - $x-int, y=0$ $(x,0)$ Review

Graphing TOV

x	y
-1	0
0	-3
1	-4
2	-3
3	0

$x-int$: $(-1,0)$ $(3,0)$

Graphing Calculator: 2ND CALC



Factoring

$y = x^2 - 2x - 3$

$0 = (x-3)(x+1)$

$x - 3 = 0$ $\quad x + 1 = 0$

$x = 3$ $\quad x = -1$

$x-int$: $(3,0)$ $(-1,0)$

Complete Square/Square Root Method

$y = x^2 - 2x - 3$ $\quad \left(\frac{b}{2}\right)^2$

$y = (x^2 - 2x) - 3$

$y = (x^2 - 2x + 1 - 1) - 3$

$y = (x-1)^2 - 4$ $\quad vertex: (1,-4)$

$0 = (x-1)^2 - 4$

$4 = (x-1)^2$

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

$\pm 2 = x - 1$

$+2 = x - 1$ $\quad -2 = x - 1$

$x = 3$ $\quad x = -1$

$x-int$: $(3,0)$ $(-1,0)$

Quad Formula $\quad x_{int} = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$

$y = x^2 - 2x - 3$

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

$x_{int} = \frac{2 \pm \sqrt{16}}{2}$

$x_{int} = \frac{2+4}{2}$ $\quad x_{int} = \frac{2-4}{2}$

$x_{int} = 3$ $\quad x_{int} = -1$

$x-int$: $(3,0)$ $(-1,0)$

C11 - 4.0 - Quadratic Formula TI-83/84 Program Notes

Prgm | New | Enter

2nd | Alpha :if necessary

Quadform Spell it out

```
PROGRAM:QUAD
:Prompt A,B,C
:Disp (-B-√(B²-4AC))/(2A)
:Disp (-B+√(B²-4AC))/(2A)
```

Prgm | I/O | Prompt | Enter

Alpha | A | , | B | , | C

Prgm | I/O | Disp | Enter

(-B+√(B² −4AC))/(2A) Negative 1st, minus' between

Prgm | I/O | Disp | Enter

(-B−√(B² −4AC))/(2A) Negative 1st, minus' between

2nd | Quit

Running the Program

Prgm | Quadform | Enter | Enter

A=# B=# C=# Enter values for A, B, C

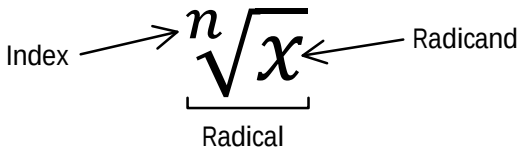
Enter Answers are x-intercepts

If I does not work

Pgrm | Edit If it does not look like the box above something is wrong

Remember to try a question you know how to factor and solve, and graph a TOV and check your calculator

C11 - 5.0 - Radicals Review



Simplifying Radicals

$\sqrt{x^2} = |x|$ $\quad \sqrt{2^2} = 2$ $\quad \sqrt[3]{x^3} = x$ $\quad \sqrt[3]{2^3} = 2$

$\sqrt{x^3} = x\sqrt{x}$ $\quad \sqrt{2^3} = 2\sqrt{2}$ $\quad \sqrt[3]{x^4} = x\sqrt[3]{x}$ $\quad \sqrt[3]{2^4} = 2\sqrt[3]{2}$

$\sqrt{x^4} = x^2$ $\quad \sqrt{2^4} = 2^2$ $\quad \sqrt[3]{x^5} = x\sqrt{x^2}$ $\quad \sqrt[3]{2^5} = 2\sqrt[3]{2^2}$

$\sqrt{x^5} = x^2\sqrt{x}$ $\quad \sqrt{2^5} = 2^2\sqrt{2}$ $\quad \sqrt[3]{x^6} = x^2$ $\quad \sqrt[3]{2^6} = 2^2$

Adding and Subtracting Radicals *Can only add or subtract like radicals: same index, same radicand.*

$x\sqrt[n]{a} + y\sqrt[n]{a} = (x + y)\sqrt[n]{a}$ $\quad 2\sqrt[2]{3} + 3\sqrt[2]{3} = (2 + 3)\sqrt[2]{3} = 5\sqrt[2]{3}$

Multiplying and Dividing Radicals *Can only multiply and divide if it has the same root index.*

$x\sqrt[n]{a} \times y\sqrt[n]{b} = xy\sqrt[n]{a \times b}$ $\quad 4\sqrt{2} \times 5\sqrt{3} = 4 \times 5\sqrt{2 \times 3} = 20\sqrt{6}$

$\dfrac{x\sqrt[n]{a}}{y\sqrt[n]{b}} = \dfrac{x}{y}\sqrt[n]{\dfrac{a}{b}}$ $\quad 20\sqrt{6} \div 5\sqrt{3} = \dfrac{20\sqrt{6}}{5\sqrt{3}} = \dfrac{20}{5}\sqrt{\dfrac{6}{3}} = 4\sqrt{2}$

Exponents, Roots and Absolute Values

$\sqrt{x^2} = |x|$ $\quad \sqrt{5^2} = 5$ $\quad (\sqrt[3]{x})^3 = x$ $\quad \left(\sqrt[3]{7}\right)^3 = 7$

$(\sqrt{x})^2 = |x|$ $\quad \left(\sqrt{8}\right)^2 = 8$

Rationalizing the Denominator

$\dfrac{a}{\sqrt{b}} =$ $\quad \dfrac{2}{\sqrt{7}} =$ $\quad \dfrac{a}{1-\sqrt{b}} =$ $\quad \dfrac{1}{3-\sqrt{5}} =$

$\dfrac{a}{\sqrt{b}} \times \dfrac{\sqrt{b}}{\sqrt{b}} =$ $\quad \dfrac{2}{\sqrt{7}} \times \dfrac{\sqrt{7}}{\sqrt{7}} =$ $\quad \dfrac{a}{1-\sqrt{b}} \times \dfrac{1+\sqrt{b}}{1+\sqrt{b}} =$ $\quad \dfrac{1}{3-\sqrt{5}} \times \dfrac{3+\sqrt{5}}{3+\sqrt{5}} =$

$\dfrac{a\sqrt{b}}{\sqrt{b}\sqrt{b}} =$ $\quad \dfrac{2\sqrt{7}}{\sqrt{7}\sqrt{7}} =$ $\quad \dfrac{a(1+\sqrt{b})}{(1-\sqrt{b})(1+\sqrt{b})} =$ $\quad \dfrac{1(3+\sqrt{5})}{(3-\sqrt{5})(3+\sqrt{5})} =$

$\dfrac{a(1+\sqrt{b})}{1-b} =$ $\quad \dfrac{3+\sqrt{5}}{(9-4)} =$

$\dfrac{a\sqrt{b}}{b}$ $\quad \dfrac{2\sqrt{7}}{7}$ $\quad \dfrac{a(1+\sqrt{b})}{1-b}$ $\quad \dfrac{3+\sqrt{5}}{4}$

Conjugate

$(a + b)(a - b)$
$= a^2 - \cancel{ab} + \cancel{ab} - b^2$
$= a^2 - b^2$

$(\sqrt{a} + \sqrt{b})(\sqrt{a} - \sqrt{b})$
$= \sqrt{a}\sqrt{a} - \cancel{\sqrt{a}\sqrt{b}} + \cancel{\sqrt{a}\sqrt{b}} - \sqrt{b}\sqrt{b}$
$= a - b$

$(\sqrt{x} + \sqrt{3})(\sqrt{x} - \sqrt{3})$
$= \sqrt{x}\sqrt{x} - \cancel{\sqrt{x}\sqrt{3}} + \cancel{\sqrt{x}\sqrt{3}} - \sqrt{3}\sqrt{3}$
$= \sqrt{x^2} - \sqrt{9}$
$= x - 3$

C11 - 6.0 -Rationals Review

Simplify/Multiply/Divide

NPVs/Restrictions

Watch out for

Factor
Multiply/Divide: Flip and Multiply
Simplify

Common Mistakes
Distribution
GCF=-1
Bedmas

Add/Subtract

Factor
LCD
Do to top, Do to bottom
Add/subtract

Sometimes factor the top to see if it simplifies first

Equations

Factor
LCD
Get an LCD/Multiply by LCD/Cross Multiply
Simplify
Solve

Possibly refactor the top/simplify again at end

C11 - 7.0 - Reciprocal Steps

So with reciprocals we always want to make sure we graph the original first

If we forget how to graft the original we must use a table of values

We want to remember the vertical asymptotes are the locations of the x intercepts on the original. (Factor!)

Then we want to draw horizontal dotted lines where y = 1 equals one and y = -1

Then we want to put points on the intersection of the original and the two horizontal lines

Then we are ready to graph

Make sure you use the graphing calculator to check your answer