

3/6
 1) Prime Factorization of 60?
 $60 \rightarrow 30 \rightarrow 15 \rightarrow 3 \cdot 5$
 $2^2, 3, 5$
 2) GCF of 12 and 32
 3) $6x^2 + 24x$ Factor
 $6x(x+4)$ factored
 0, -4 solutions
 AOS $\frac{0+(-4)}{2} = -2$
 Vertex $(-2, -24)$
 $6(-2)^2 + 24(-2)$
 $24 - 48 = -24$

Mar 6-7:49 AM

p 395
 1) $x^2 + 6x + 9 = (x+3)(x+3)$
 $(x+3)^2$
 2) $4x^2 + 20x + 25$
 $(2x+5)^2$

Mar 6-1:14 PM

p 395
 3) $36x^2 - 24x + 16$
 $4(9x^2 - 6x + 4)$
 $4(3x-2)^2$

Mar 6-1:18 PM

p 395
 4) $9x^2 + 12x + 4$
 $(3x+2)^2$
 $\frac{2}{3x} = \frac{6}{9x} \frac{6}{9x} \frac{2}{3x}$
 $\frac{36}{9x \cdot 9x}$

Mar 6-1:21 PM

*5 p 395 factored
 Area = $4x^2 + 12x + 9 = (2x+3)(2x+3)$
 $2x+3$
 $2x+3$
 $2x+3$
 $2x+3$
 perimeter = $4(2x+3)$
 $= 8x+12$
 If $x=2$
 $8(2)+12$
 $16+12$
 $28 ft$

Mar 6-1:22 PM

6) $x^2 - 16$
 $(x-4)(x+4)$
 7) $9b^4 - 200$
 NOT Differences of the Squares

Mar 6-1:26 PM

8) $1 - m^6$

$$(1 - m^3)(1 + m^3)$$

$$1 + \underbrace{m^3 - m^3}_{\text{cancel out}} - m^6$$

Mar 6-1:27 PM

9) $36s^2 - 4t^2$

$$4(9s^2 - t^2)$$

$$4(3s - t)(3s + t)$$

Mar 6-1:28 PM

Example $x^2 y^2 - 196$

$$(xy - 14)(xy + 14)$$

10) $x^2 y^2 + 196$

↑
can't factor

Mar 6-1:29 PM

p 401

1) $6(st^2 + 12)$
Good

2) $5m(m + 9)$

3) $2p(p^4 - 9)$
 $2p(p^2 - 3)(p^2 + 3)$

Mar 6-1:31 PM

4) $(x - 8y)(2x + 3y)$
Done

5) $3k^3j(5k^2 + 19)$

6) $14(7g^4 - 2g + 5)$

Mar 6-1:33 PM

7) $24xy^2 + 40y$
 $8y(3xy + 5)$

8) $x^2y(3x + y)$

Mar 6-1:37 PM

$$\begin{aligned}
 10) & -3a^2b + 12ab - 12b \\
 & -(3a^2b - 12ab + 12b) \\
 & -3b(a^2 - 4a + 4) \\
 \text{GCF } & \boxed{-3b(a-2)^2}
 \end{aligned}$$

Mar 6-1:40 PM

$$\begin{aligned}
 11) & 5x^3 - 45x^2s + 3x^2 - 27s^2 \\
 & (5x^3 - 45x^2s)(+3x^2 - 27s^2) \\
 & 5x(x^2 - 9s^2) + 3(x^2 - 9s^2) \\
 & (5x + 3)(x^2 - 9s^2) \\
 & \boxed{(5x + 3)(x - 3s)(x + 3s)}
 \end{aligned}$$

Mar 6-1:42 PM

$$\begin{aligned}
 13) & 6x^3 + 39x^2 + 45x \\
 & 3x(2x^2 + 13x + 15) \quad \begin{matrix} 30 \\ \swarrow \searrow \\ 5 \quad 6 \end{matrix} \\
 & \boxed{3x(x+5)(2x+3)} \quad \begin{matrix} 30 \\ \swarrow \searrow \\ 5 \quad 6 \\ \times \quad \frac{10}{2x} \quad \frac{3}{2x} \end{matrix}
 \end{aligned}$$

Mar 6-1:46 PM

$$\begin{aligned}
 16) & 3c^4 + 24c^3d + 48c^2d^2 \\
 & 3c^2(c^2 + 8cd + 16d^2) \\
 & \boxed{3c^2(c + 4d)^2}
 \end{aligned}$$

Mar 6-1:49 PM

$$\begin{aligned}
 18) & 10w^6 - 160w^2v^4 \\
 & 10w^2(w^4 - 16v^4) \\
 & \boxed{10w^2(w^2 - 4v^2)(w^2 + 4v^2)}
 \end{aligned}$$

Mar 6-1:51 PM

Graphing Quadratics

$$y = x^2 - 4$$

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

Zeros 2, -2

Axis of Symmetry (A.O.S)

$$\frac{-2 + 2}{2} = 0$$

X=0

A.O.S. is the x coordinate to the Vertex

(0, -4)

$$y = 0^2 - 4$$

Mar 6-1:53 PM

$y = 2x^2 - 3x - 5$ Graph A.O.S
Vertex
Roots

-10
 $\frac{-5}{2x} \frac{1}{x}$
 $(2x-5)(x+1)$
Roots $\frac{5}{2}, -1$
A.O.S $\frac{-b}{2a}$ $a=2$ $b=-3$
A.O.S $\frac{3}{4}$
 $-1 + \frac{5}{2} =$
 $-1 + 2\frac{1}{2}$

Mar 6-1:58 PM

$8y^3 - 4y^2 + 10y$
Factor Completely
 $2y(4y^2 - 2y + 5)$ 20

Mar 6-8:00 AM

What is the correct factorization of $5(x+2) - 3x(x+2)$?
 $(5-3x)(x+2)$
What are the solutions?
 $(5-3x)(x+2) = 0$ $\frac{5-3x=0}{-5-3x=-5}$
 $(-3x+5)(x+2) = 0$ $\frac{-3x=-5}{-3} \frac{-5}{-3}$
 $x = \frac{5}{3}$
 $\frac{-5}{-3}$
 $\left\{ \frac{5}{3}, -2 \right\}$

Mar 6-8:02 AM

12. What value of b would make $x^2 + bx - 24$ factorable?
 $x^2 + 5x - 24$
F 4, 10, -10 H 8
G 5, -5, -2, 2 J 12
~~12, -2~~ 10
~~12, 2~~
~~-8, 3~~
8, -3
6, -4
-6, 4

Mar 6-8:07 AM

$-5x^2 + 9x + 2$ Factor
 $-1(5x^2 - 9x - 2)$ -10
 $-1(x-2)(5x+1)$ $\frac{-2}{x} \frac{10}{5x} \frac{1}{5x}$

Mar 6-8:11 AM

16. The area of a rectangle is $12x^2 - 8x - 15$. The width is $(2x - 3)$.
What is the length of the rectangle?
F $(6x - 5)$ H $(2x - 3)$
G $(6x + 5)$ J $(2x + 3)$
Area $12x^2 - 8x - 15 = (2x-3)(6x+5)$

Mar 6-8:16 AM

8-1 Graphing Quadratics

$y = ax^2 + bx + c$

* $a \neq 0$

$-\frac{1}{2}x^2 + 3$

$-\frac{1}{2}x^2 + 0x + 3$
 ↑
 No Linear Term

* When No x Term
 The axis of Symmetry (A.O.S.)
 is $x=0$. The y axis
 Vertex $(0, 3)$

Mar 6-8:26 AM

$3x^2 - 5x + 2$

$a = 3$ Opens UP

$b = -5$

$c = 2$

Identify the Domain & Range

$y = x^2 - 4$

$(x+2)(x-2) = 0$
 $-2, 2$

Vertex $(0, -4)$
 facing up

$D = \mathbb{R}$

$D = \{x \in \mathbb{R}\}$

$R = y \geq -4$

Mar 6-8:32 AM

$\frac{-b}{2a}$

For each quadratic function, find the axis of symmetry of its graph.

<p>7. $y = 3x^2 - 6x + 4$</p> <p>$a = 3$ $b = -6$</p> <p>$\frac{6}{2(3)} = 1$</p> <p>$X = 1$ A.O.S</p> <p>Vertex</p> <p>$3(1)^2 - 6(1) + 4$ $y = 1$</p> <p>$(1, 1)$</p>	<p>8. $y = -x^2 + 4x$</p> <p>$a = -1$ $b = 4$</p> <p>$\frac{-4}{2(-1)} = \frac{-4}{-2} = 2$</p> <p>A.O.S = 2 $X = 2$</p> <p>Vertex</p> <p>$(2, 4)$</p> <p>$y = -(2)^2 + 4(2)$ $-4 + 8 = 4$</p>	<p>9. $y = 4x^2 + \frac{1}{2}x + 3$</p> <p>$a = 4$ $b = \frac{1}{2}$</p> <p>$-\frac{1/2}{2(4)}$</p> <p>$-\frac{1/2}{8}$</p> <p>$-\frac{1/2} \cdot \frac{1}{8} = \frac{-1}{16}$</p>
---	---	---

Mar 6-8:43 AM

Find Vertex

1. $y = x^2 + 4x + 4$

$(x+2)(x+2) = (x+2)^2$

Root -2

$a = 1$ A.O.S

$b = 4$ $\frac{-b}{2a}$

$\frac{-4}{2(1)} = -2$ $X = -2$ (A.O.S X Coordinate to Vertex)

Vertex - plug in A.O.S to Equation vertex

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

$y = (-2)^2 + 4(-2) + 4$

$y = 4 - 8 + 4$

$y = 0$

$(-2, 0)$

Mar 6-8:53 AM

$y = 3x^2 - 6x + 4$

$a = 3$
 $b = -6$

Find A.O.S $\frac{-b}{2a} = \frac{6}{2(3)} = 1$ $X = 1$

Vertex $(1, 1)$

$y = 3(1)^2 - 6(1) + 4$
 $3 - 6 + 4$
 1

Mar 6-2:05 PM

Example

$y = x^2 - 8x + 5$ Graph

Axis of Symmetry (A.O.S) $\frac{-b}{2a}$

$a = 1$ $\frac{8}{2(1)} = 4$ $X = 4$

$b = -8$

Vertex $(4, -11)$

$y = x^2 - 8x + 5$ — original Equation

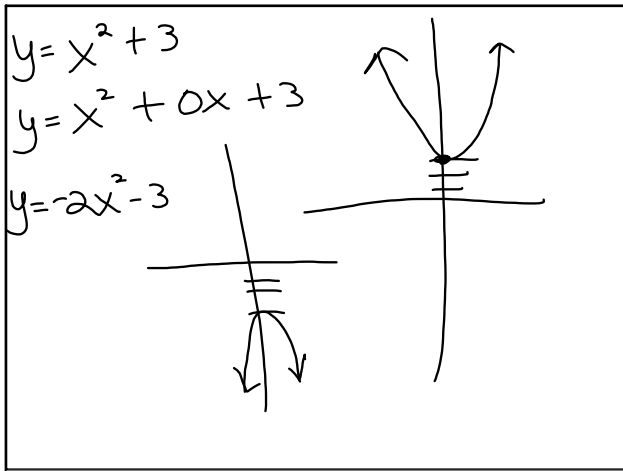
$y = 4^2 - 8(4) + 5$

$y = 16 - 32 + 5$

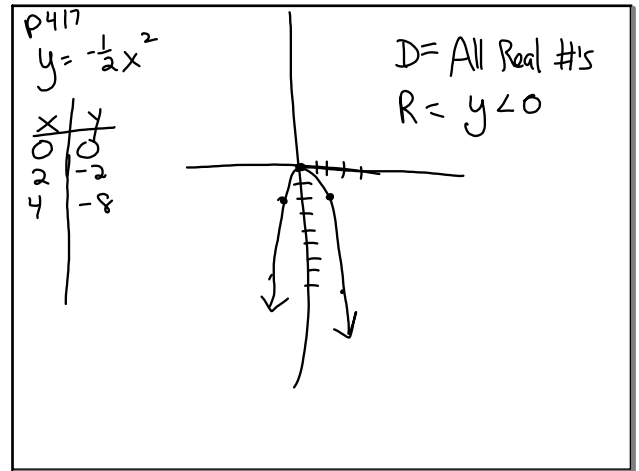
$y = -16 + 5$

$y = -11$

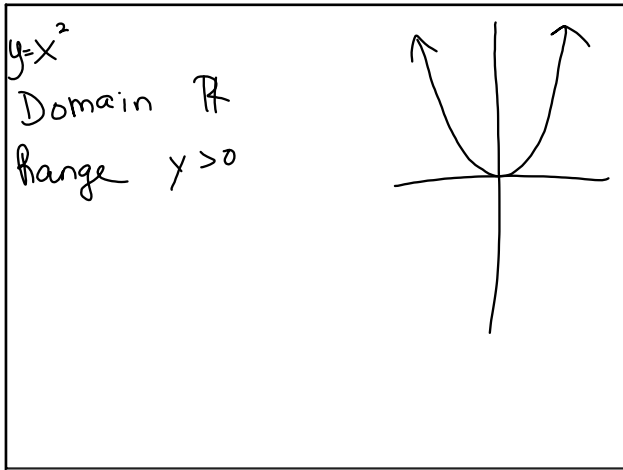
Mar 6-2:12 PM



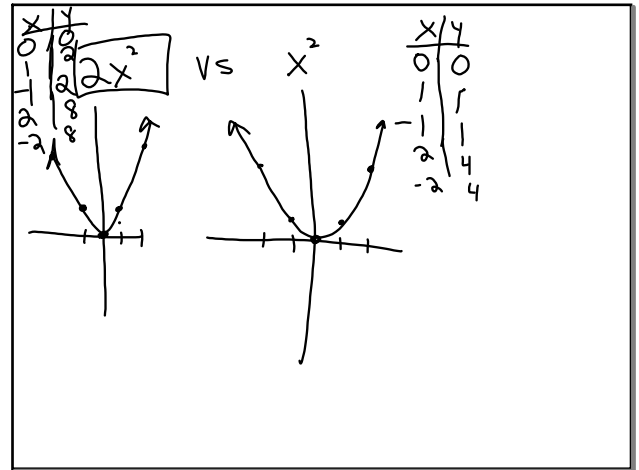
Mar 6-2:22 PM



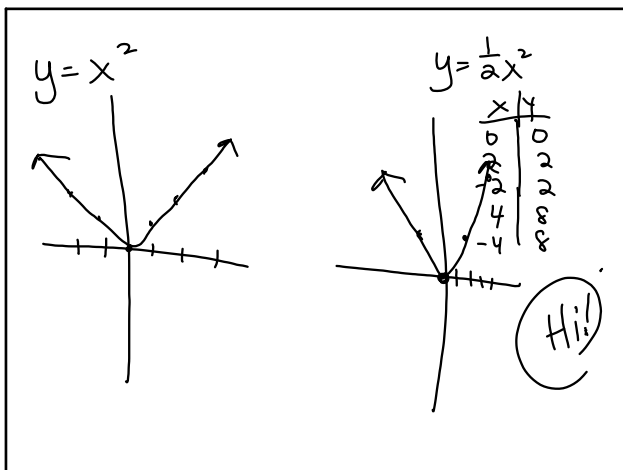
Mar 6-2:25 PM



Mar 6-2:29 PM



Mar 6-2:30 PM



Mar 6-2:36 PM