Algebra 1

Our Goal: To learn how to factor $x^2 + bx + c$

Warm Up: Quiz discussion

Today's Homework
- 7.5 Exercises, p.389: 4-38 (evens)
- iready due Friday, why wait?

Previous Homework
None (HFZ)

Determine whether the equation represents a *linear* or *nonlinear* function. Explain.

1. $y = x^2 - 14$

2. $y = \sqrt{8} + x$

Factor $x^2 + 10x$

$x(x+10)$

Core Concept

Factoring $x^2 + bx + c$ When c Is Positive

Algebra $x^2 + bx + c = (x + p)(x + q)$ when $p + q = b$ and $pq = c$.

When c is positive, p and q have the same sign as b.

Examples $x^2 + 6x + 5 = (x + 1)(x + 5)$

$x^2 - 6x + 5 = (x - 1)(x - 5)$

Factor $x^2 + 10x + 16$.

$(x+8)(x+2)$

F: x^2

L: 16

$16, 1$
$8, 2$
$4, 4$

Factor the polynomial.

1. $x^2 + 7x + 6$

$(x+6)(x+1)$

2. $x^2 + 9x + 8$

$(x+8)(x+1)$

Factor $x^2 - 8x + 12$.

$(x-6)(x-2)$

prod = 12
sum = −8

Core Concept

Factoring $x^2 + bx + c$ When c Is Negative

Algebra $x^2 + bx + c = (x + p)(x + q)$ when $p + q = b$ and $pq = c$.

When c is negative, p and q have different signs.

Example $x^2 - 4x - 5 = (x + 1)(x - 5)$

Factor $x^2 + 4x - 21$.

Factor the polynomial.

3. $w^2 - 4w + 3$ $(w-3)(w-1)$

4. $n^2 - 12n + 35$ $(n-7)(n-5)$

5. $x^2 - 14x + 24$ $(x-12)(x-2)$

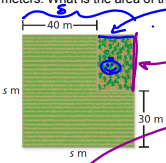
6. $x^2 + 2x - 15$ $(x-3)(x+5)$

7. $y^2 + 13y - 30$ ~~$(y-10)(y+3)$~~ $(y-2)(y+15)$

8. $v^2 - 1v - 42$ $= (v-7)(v+6)$

February 12, 2024

A farmer plants a rectangular pumpkin patch in the northeast corner of a square plot of land. The area of the pumpkin patch is 600 square meters. What is the area of the square plot of land?



$s-40$

$s-30$

Area $= (s-40)(s-30) = 600$

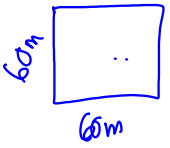
$s^2 - 70s + 1200 = 600$

$-600 \quad -600$

$s^2 - 70s + 600 = 0$

$(s-60)(s-10) = 0$

$s = 60$ or ~~10~~



$3600\ m^2$

Factor.

$3x^2 + 6x - 24$

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

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

x^2+6x+9

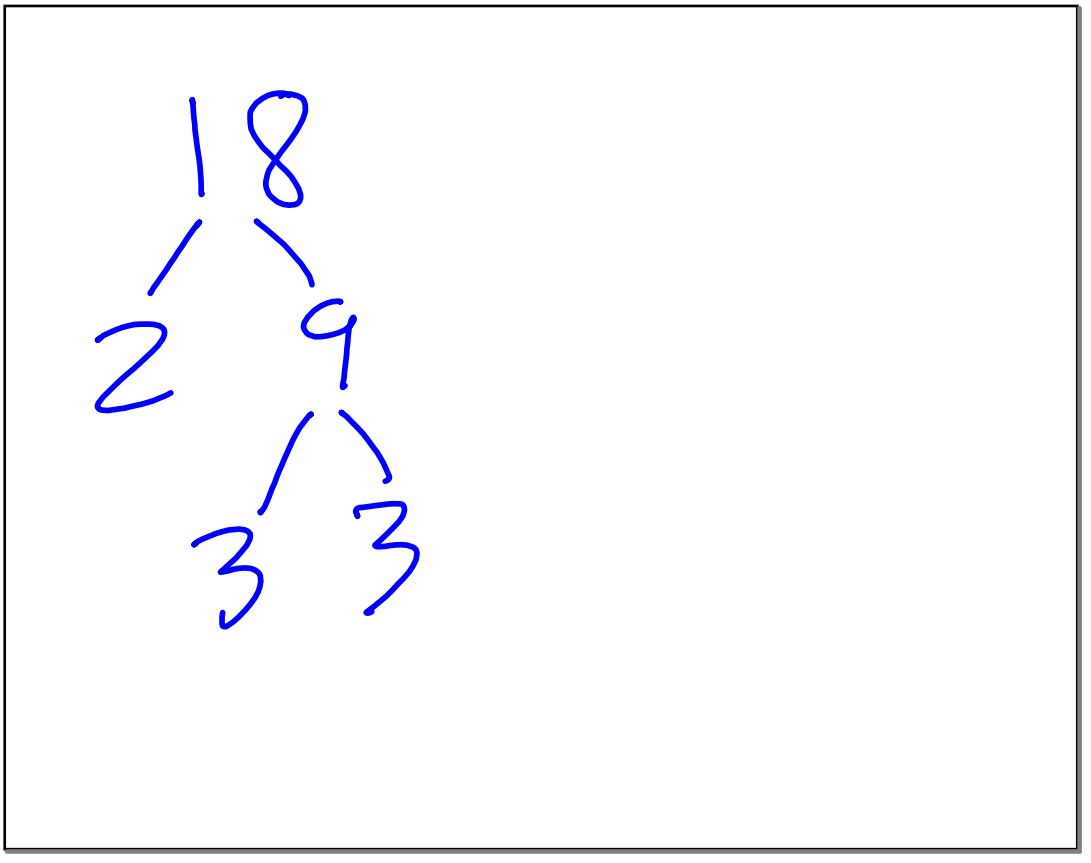
$(x+3)(x+3)$ ←

$(x+3)^2$ better

x^2+4x+6

$(x+\quad)(x+\quad)$

Prime


18
2
9
3
3