Name: _____Special Practice Period _____

Problem 1

Polynomial function	Polynomial Equation
$f(x)=16\cdot x^3+2$	$16\cdot x^3+2=0$

State the number of roots this polynomial MUST have _____

state y intercept _____

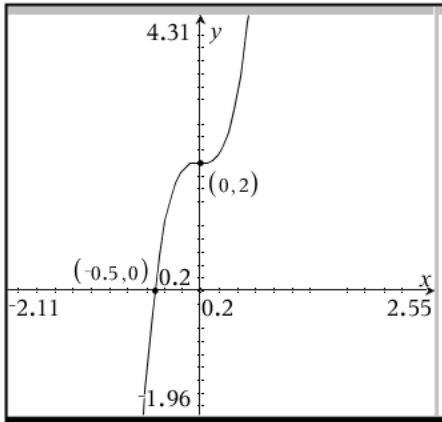
As x →−∞ f(x) →_____

As x →+∞ f(x) →_____

Completely factor and solve the given polynomial equation

Mark all that apply

- ◯ has GCF (greatest common factor)
- ◯ is PST (perfect square trinomial)
- ◯ is DOTS (difference of two squares)
- ◯ is SOTC (sum of two cubes)
- ◯ is DOTC (difference of two cubes)
- ◯ is a multiple of one of the above
- ◯ cannot be factored
- ◯ has positive solutions
- ◯ has negative solutions
- ◯ has both positive and negative solutions
- ◯ has zero as a solution
- ◯ has imaginary solutions
- ◯ has irrational solutions



$16\cdot x^3+2=0$

GCF=_____

completely factored form of the polynomial _____

Solutions _____

Problem 2

Polynomial function	Polynomial Equation
$f(x)=50-8\cdot x^2$	$50-8\cdot x^2=0$

State the number of roots this polynomial MUST have _____

state y intercept _____

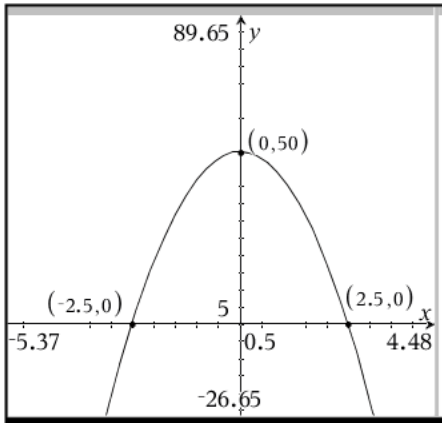
As x →−∞ f(x) →_____

As x →+∞ f(x) →_____

Completely factor and solve the given polynomial equation

Mark all that apply

- ◯ has GCF (greatest common factor)
- ◯ is PST (perfect square trinomial)
- ◯ is DOTS (difference of two squares)
- ◯ is SOTC (sum of two cubes)
- ◯ is DOTC (difference of two cubes)
- ◯ is a multiple of one of the above
- ◯ cannot be factored
- ◯ has positive solutions
- ◯ has negative solutions
- ◯ has both positive and negative solutions
- ◯ has zero as a solution
- ◯ has imaginary solutions
- ◯ has irrational solutions



$50-8\cdot x^2=0$

GCF=_____

completely factored form of the polynomial _____

Solutions _____

Name: _____Special Practice Period _____

Problem 3

Polynomial function	Polynomial Equation
$f(x)=-8\cdot x^2-40\cdot x-50$	$-8\cdot x^2-40\cdot x-50=0$

State the number of roots this polynomial MUST have _____

state y intercept _____

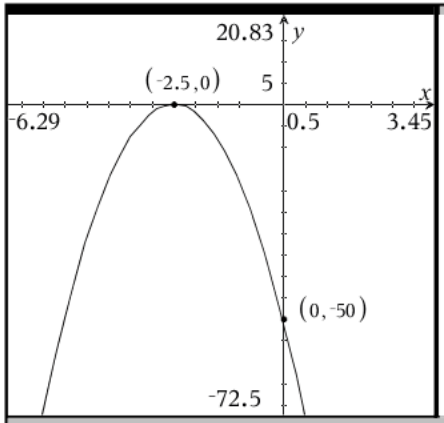
As x →−∞ f(x) →_____

As x →+∞ f(x) →_____

Completely factor and solve the given polynomial equation

Mark all that apply

- ◯ has GCF (greatest common factor)
- ◯ is PST (perfect square trinomial)
- ◯ is DOTS (difference of two squares)
- ◯ is SOTC (sum of two cubes)
- ◯ is DOTC (difference of two cubes)
- ◯ is a multiple of one of the above
- ◯ cannot be factored
- ◯ has positive solutions
- ◯ has negative solutions
- ◯ has both positive and negative solutions
- ◯ has zero as a solution
- ◯ has imaginary solutions
- ◯ has irrational solutions



$-8\cdot x^2-40\cdot x-50=0$

GCF=_____

completely factored form of the polynomial _____

Solutions _____

Problem 4

Polynomial function	Polynomial Equation
$f(x)=250\cdot x^3-16$	$250\cdot x^3-16=0$

State the number of roots this polynomial MUST have _____

state y intercept _____

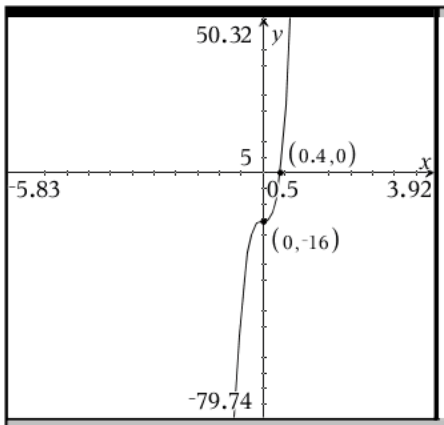
As x →−∞ f(x) →_____

As x →+∞ f(x) →_____

Completely factor and solve the given polynomial equation

Mark all that apply

- ◯ has GCF (greatest common factor)
- ◯ is PST (perfect square trinomial)
- ◯ is DOTS (difference of two squares)
- ◯ is SOTC (sum of two cubes)
- ◯ is DOTC (difference of two cubes)
- ◯ is a multiple of one of the above
- ◯ cannot be factored
- ◯ has positive solutions
- ◯ has negative solutions
- ◯ has both positive and negative solutions
- ◯ has zero as a solution
- ◯ has imaginary solutions
- ◯ has irrational solutions



$250\cdot x^3-16=0$

GCF=_____

completely factored form of the polynomial _____

Solutions _____

Name: _____Special Practice Period _____

Problem 5

Polynomial function	Polynomial Equation
$f(x)=8-50\cdot x^2$	$8-50\cdot x^2=0$

State the number of roots this polynomial MUST have _____

state y intercept _____

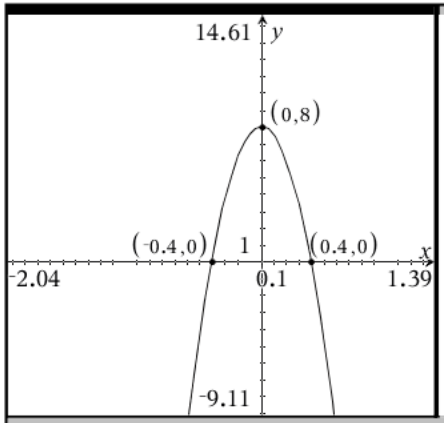
As x →−∞ f(x) →_____

As x →+∞ f(x) →_____

Completely factor and solve the given polynomial equation

Mark all that apply

- ◯ has GCF (greatest common factor)
- ◯ is PST (perfect square trinomial)
- ◯ is DOTS (difference of two squares)
- ◯ is SOTC (sum of two cubes)
- ◯ is DOTC (difference of two cubes)
- ◯ is a multiple of one of the above
- ◯ cannot be factored
- ◯ has only positive solutions
- ◯ has only negative solutions
- ◯ has both positive and negative solutions
- ◯ has zero as a solution
- ◯ has imaginary solutions
- ◯ has irrational solutions



$8-50\cdot x^2=0$

GCF=_____

completely factored form of the polynomial _____

Solutions _____

Problem 6

Polynomial function	Polynomial Equation
$f(x)=27\cdot x^2+36\cdot x+12$	$27\cdot x^2+36\cdot x+12=0$

State the number of roots this polynomial MUST have _____

state y intercept _____

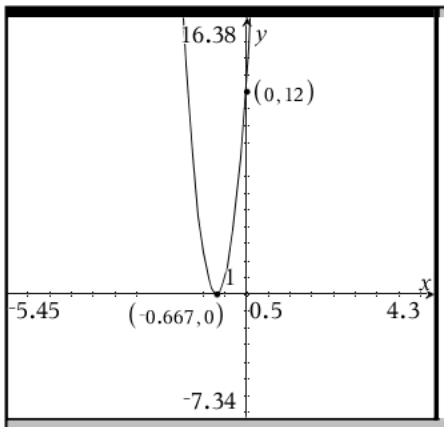
As x →−∞ f(x) →_____

As x →+∞ f(x) →_____

Completely factor and solve the given polynomial equation

Mark all that apply

- ◯ has GCF (greatest common factor)
- ◯ is PST (perfect square trinomial)
- ◯ is DOTS (difference of two squares)
- ◯ is SOTC (sum of two cubes)
- ◯ is DOTC (difference of two cubes)
- ◯ is a multiple of one of the above
- ◯ cannot be factored
- ◯ has positive solutions
- ◯ has negative solutions
- ◯ has both positive and negative solutions
- ◯ has zero as a solution
- ◯ has imaginary solutions
- ◯ has irrational solutions



$27\cdot x^2+36\cdot x+12=0$

GCF=_____

completely factored form of the polynomial _____

Solutions _____

Name: _____Special Practice Period _____

Problem 7

Polynomial function Polynomial Equation

$f(x)=-54\cdot x^3-16$ $-54\cdot x^3-16=0$

State the number of roots this polynomial MUST have _____

state y intercept _____

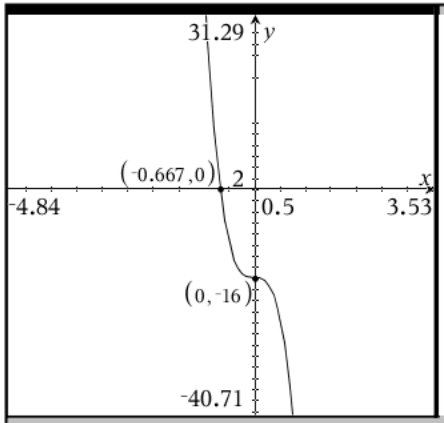
As $x \to -\infty$ $f(x) \to$_____

As $x \to +\infty$ $f(x) \to$_____

Completely factor and solve the given polynomial equation

Mark all that apply

- ◯ has GCF (greatest common factor)
- ◯ is PST (perfect square trinomial)
- ◯ is DOTS (difference of two squares)
- ◯ is SOTC (sum of two cubes)
- ◯ is DOTC (difference of two cubes)
- ◯ is a multiple of one of the above
- ◯ cannot be factored
- ◯ has positive solutions
- ◯ has negative solutions
- ◯ has both positive and negative solutions
- ◯ has zero as a solution
- ◯ has imaginary solutions
- ◯ has irrational solutions



$-54\cdot x^3-16=0$

GCF=_____

completely factored form of the polynomial _____

Solutions _____

Problem 8

Polynomial function Polynomial Equation

$f(x)=5\cdot x^3-320$ $5\cdot x^3-320=0$

State the number of roots this polynomial MUST have _____

state y intercept _____

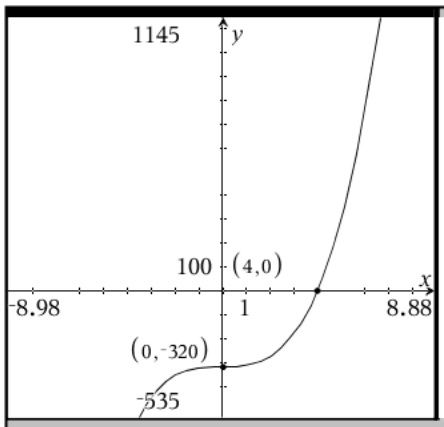
As $x \to -\infty$ $f(x) \to$_____

As $x \to +\infty$ $f(x) \to$_____

Completely factor and solve the given polynomial equation

Mark all that apply

- ◯ has GCF (greatest common factor)
- ◯ is PST (perfect square trinomial)
- ◯ is DOTS (difference of two squares)
- ◯ is SOTC (sum of two cubes)
- ◯ is DOTC (difference of two cubes)
- ◯ is a multiple of one of the above
- ◯ cannot be factored
- ◯ has positive solutions
- ◯ has negative solutions
- ◯ has both positive and negative solutions
- ◯ has zero as a solution
- ◯ has imaginary solutions
- ◯ has irrational solutions



$5\cdot x^3-320=0$

GCF=_____

completely factored form of the polynomial _____

Solutions _____

Name: _____Special Practice Period _____

Problem 9

Polynomial function	Polynomial Equation
$f(x)=-128\cdot x^3-2$	$-128\cdot x^3-2=0$

State the number of roots this polynomial MUST have _____

state y intercept _____

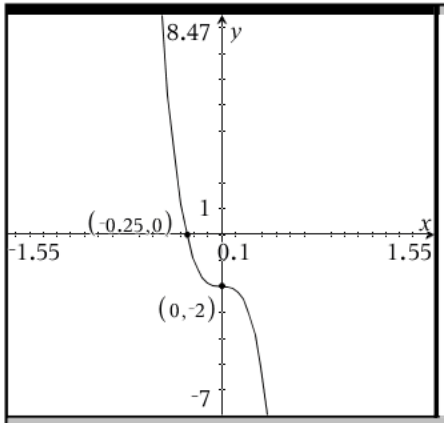
As $x \to -\infty$ $f(x) \to$_____

As $x \to +\infty$ $f(x) \to$_____

Completely factor and solve the given polynomial equation

Mark all that apply

- ◯ has GCF (greatest common factor)
- ◯ is PST (perfect square trinomial)
- ◯ is DOTS (difference of two squares)
- ◯ is SOTC (sum of two cubes)
- ◯ is DOTC (difference of two cubes)
- ◯ is a multiple of one of the above
- ◯ cannot be factored
- ◯ has positive solutions
- ◯ has negative solutions
- ◯ has both positive and negative solutions
- ◯ has zero as a solution
- ◯ has imaginary solutions
- ◯ has irrational solutions



$-128\cdot x^3-2=0$

GCF=_____

completely factored form of the polynomial _____

Solutions _____

Problem 10

Polynomial function	Polynomial Equation
$f(x)=-48\cdot x^2-120\cdot x-75$	$-48\cdot x^2-120\cdot x-75=0$

State the number of roots this polynomial MUST have _____

state y intercept _____

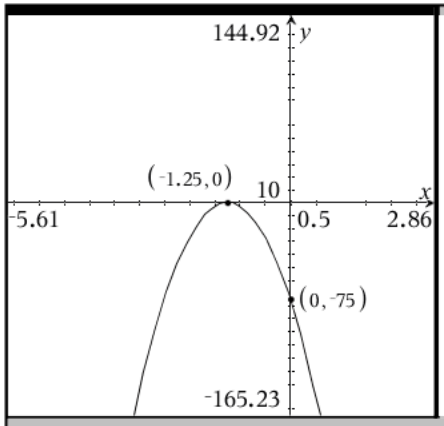
As $x \to -\infty$ $f(x) \to$_____

As $x \to +\infty$ $f(x) \to$_____

Completely factor and solve the given polynomial equation

Mark all that apply

- ◯ has GCF (greatest common factor)
- ◯ is PST (perfect square trinomial)
- ◯ is DOTS (difference of two squares)
- ◯ is SOTC (sum of two cubes)
- ◯ is DOTC (difference of two cubes)
- ◯ is a multiple of one of the above
- ◯ cannot be factored
- ◯ has positive solutions
- ◯ has negative solutions
- ◯ has both positive and negative solutions
- ◯ has zero as a solution
- ◯ has imaginary solutions
- ◯ has irrational solutions



$-48\cdot x^2-120\cdot x-75=0$

GCF=_____

completely factored form of the polynomial _____

Solutions _____

Name: _____Special Practice Period _____

Problem 11

Polynomial function	Polynomial Equation
$f(x)=5000\cdot x^3-40$	$5000\cdot x^3-40=0$

State the number of roots this polynomial MUST have _____

state y intercept _____

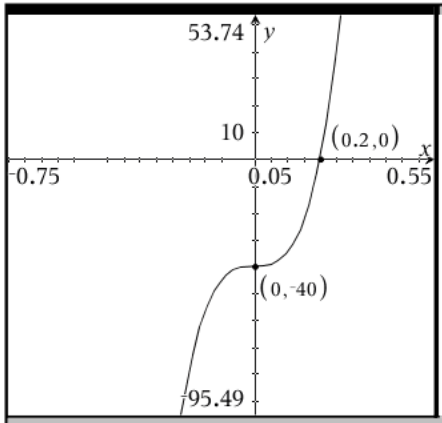
As $x \to -\infty$ f(x) →_____

As $x \to +\infty$ f(x) →_____

Completely factor and solve the given polynomial equation

Mark all that apply

- ◯ has GCF (greatest common factor)
- ◯ is PST (perfect square trinomial)
- ◯ is DOTS (difference of two squares)
- ◯ is SOTC (sum of two cubes)
- ◯ is DOTC (difference of two cubes)
- ◯ is a multiple of one of the above
- ◯ cannot be factored
- ◯ has positive solutions
- ◯ has negative solutions
- ◯ has both positive and negative solutions
- ◯ has zero as a solution
- ◯ has imaginary solutions
- ◯ has irrational solutions



$5000\cdot x^3-40=0$

GCF=_____

completely factored form of the polynomial _____

Solutions _____

Problem 12

Polynomial function	Polynomial Equation
$f(x)=147-48\cdot x^2$	$147-48\cdot x^2=0$

State the number of roots this polynomial MUST have _____

state y intercept _____

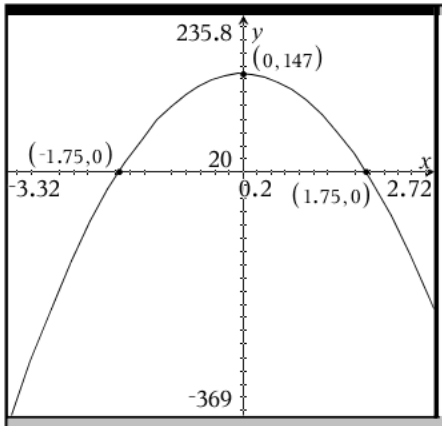
As $x \to -\infty$ f(x) →_____

As $x \to +\infty$ f(x) →_____

Completely factor and solve the given polynomial equation

Mark all that apply

- ◯ has GCF (greatest common factor)
- ◯ is PST (perfect square trinomial)
- ◯ is DOTS (difference of two squares)
- ◯ is SOTC (sum of two cubes)
- ◯ is DOTC (difference of two cubes)
- ◯ is a multiple of one of the above
- ◯ cannot be factored
- ◯ has positive solutions
- ◯ has negative solutions
- ◯ has both positive and negative solutions
- ◯ has zero as a solution
- ◯ has imaginary solutions
- ◯ has irrational solutions



$147-48\cdot x^2=0$

GCF=_____

completely factored form of the polynomial _____

Solutions _____

Name: _____Special Practice Period _____

Problem 13

Polynomial function Polynomial Equation

$f(x)=54-1024\cdot x^{3}$ $54-1024\cdot x^{3}=0$

State the number of roots this polynomial MUST have _____

state y intercept _____

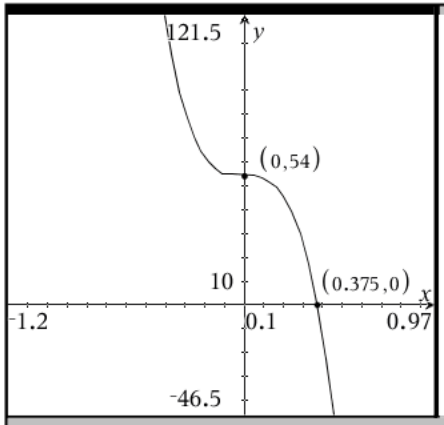
As x →−∞ f(x) →_____

As x →+∞ f(x) →_____

Completely factor and solve the given polynomial equation

Mark all that apply

- ◯ has GCF (greatest common factor)
- ◯ is PST (perfect square trinomial)
- ◯ is DOTS (difference of two squares)
- ◯ is SOTC (sum of two cubes)
- ◯ is DOTC (difference of two cubes)
- ◯ can be factored
- ◯ is a multiple of one of the above
- ◯ has positive solutions
- ◯ has negative solutions
- ◯ has both positive and negative solutions
- ◯ has zero as a solution
- ◯ has imaginary solutions
- ◯ has irrational solutions



$54-1024\cdot x^{3}=0$

GCF=_____

completely factored form of the polynomial _____

Solutions _____

Problem 14

Polynomial function Polynomial Equation

$f(x)=-75\cdot x^{2}+60\cdot x-12$

$-75\cdot x^{2}+60\cdot x-12=0$

State the number of roots this polynomial MUST have _____

state y intercept _____

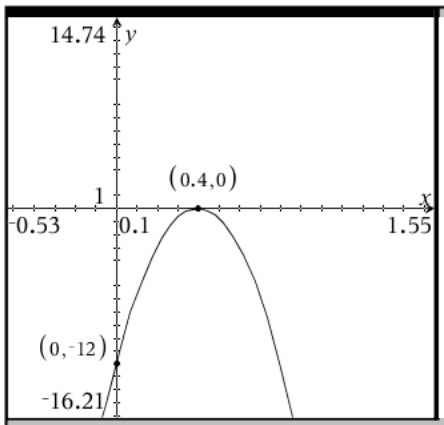
As x →−∞ f(x) →_____

As x →+∞ f(x) →_____

Completely factor and solve the given polynomial equation

Mark all that apply

- ◯ has GCF (greatest common factor)
- ◯ is PST (perfect square trinomial)
- ◯ is DOTS (difference of two squares)
- ◯ is SOTC (sum of two cubes)
- ◯ is DOTC (difference of two cubes)
- ◯ is a multiple of one of the above
- ◯ cannot be factored
- ◯ has positive solutions
- ◯ has negative solutions
- ◯ has both positive and negative solutions
- ◯ has zero as a solution
- ◯ has imaginary solutions
- ◯ has irrational solutions



$-75\cdot x^{2}+60\cdot x-12=0$

GCF=_____

completely factored form of the polynomial _____

Solutions _____

Name: _____Special Practice Period _____

Problem 15

Polynomial function Polynomial Equation

$f(x)=108\cdot x^3-500$ $108\cdot x^3-500=0$

State the number of roots this polynomial MUST have _____

state y intercept _____

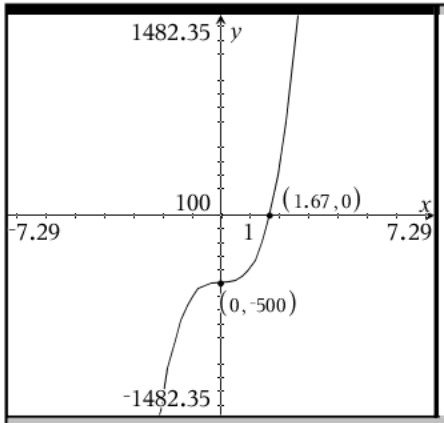
As $x \to -\infty$ $f(x) \to$_____

As $x \to +\infty$ $f(x) \to$_____

Completely factor and solve the given polynomial equation

Mark all that apply

- ◯ has GCF (greatest common factor)
- ◯ is PST (perfect square trinomial)
- ◯ is DOTS (difference of two squares)
- ◯ is SOTC (sum of two cubes)
- ◯ is DOTC (difference of two cubes)
- ◯ is a multiple of one of the above
- ◯ cannot be factored
- ◯ has positive solutions
- ◯ has negative solutions
- ◯ has both positive and negative solutions
- ◯ has zero as a solution
- ◯ has imaginary solutions
- ◯ has irrational solutions



$108\cdot x^3-500=0$

GCF=_____

completely factored form of the polynomial _____

Solutions _____

Problem 16

Polynomial function Polynomial Equation

$f(x)=27-75\cdot x^2$ $27-75\cdot x^2=0$

State the number of roots this polynomial MUST have _____

state y intercept _____

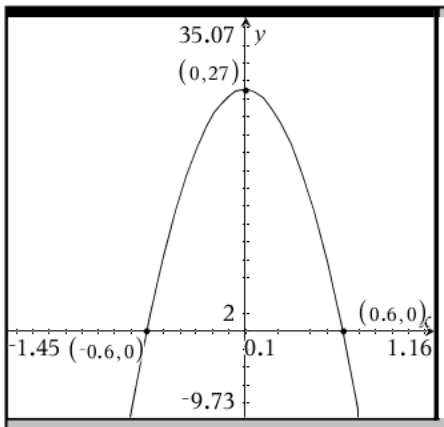
As $x \to -\infty$ $f(x) \to$_____

As $x \to +\infty$ $f(x) \to$_____

Completely factor and solve the given polynomial equation

Mark all that apply

- ◯ has GCF (greatest common factor)
- ◯ is PST (perfect square trinomial)
- ◯ is DOTS (difference of two squares)
- ◯ is SOTC (sum of two cubes)
- ◯ is DOTC (difference of two cubes)
- ◯ is a multiple of one of the above
- ◯ cannot be factored
- ◯ has positive solutions
- ◯ has negative solutions
- ◯ has both positive and negative solutions
- ◯ has zero as a solution
- ◯ has imaginary solutions
- ◯ has irrational solutions



$27-75\cdot x^2=0$

GCF=_____

completely factored form of the polynomial _____

Solutions _____