

12-2a

Graphing Calculator Investigation

A Preview of Lesson 12-2

TI-73

What You'll Learn

Use a graphing calculator to graph families of quadratic functions.

Families of Quadratic Functions

In Lesson 11-5a, you discovered that families of linear functions share the same slope or y -intercept. Families of nonlinear functions also share a common characteristic. You can use a TI-73 graphing calculator to investigate families of quadratic functions.



ACTIVITY

Graph $y = x^2$, $y = x^2 + 5$, and $y = x^2 - 3$ on the same screen.

STEP 1

Clear any existing equations from the $Y=$ list.

Keystrokes: $Y=$ CLEAR

STEP 2

Enter each equation.

Keystrokes: x x^2 ENTER

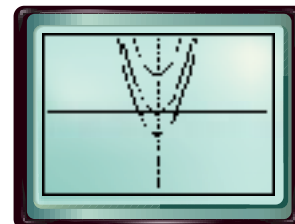
x x^2 + 5 ENTER

x x^2 - 3 ENTER

STEP 3

Graph the equations in the standard viewing window.

Keystrokes: ZOOM 6



EXERCISES

1. Compare and contrast the three equations you graphed.
2. Describe how the graphs of the three equations are related.
3. **MAKE A CONJECTURE** How does changing the value of c in the equation $y = x^2 + c$ affect the graph?
4. Use a graphing calculator to graph $y = 0.5x^2$, $y = x^2$, and $y = 2x^2$.
5. Compare and contrast the three equations you graphed in Exercise 4.
6. Describe how the graphs of the three equations are related.
7. **MAKE A CONJECTURE** How does changing the value of a in the equation $y = ax^2$ affect the graph?
8. Write a family of three quadratic functions. Describe the common characteristic of their graphs.



12-2a

Graphing Calculator Investigation

A Preview of Lesson 12-2

TI-82

What You'll Learn

Use a graphing calculator to graph families of quadratic functions.

Families of Quadratic Functions

In Lesson 11-5a, you discovered that families of linear functions share the same slope or y -intercept. Families of nonlinear functions also share a common characteristic. You can use a TI-82 graphing calculator to investigate families of quadratic functions.



ACTIVITY

Graph $y = x^2$, $y = x^2 + 5$, and $y = x^2 - 3$ on the same screen.

STEP 1

Clear any existing equations from the $Y=$ list.

Keystrokes: $Y=$ CLEAR

STEP 2

Enter each equation.

Keystrokes: X,T,θ x^2 ENTER

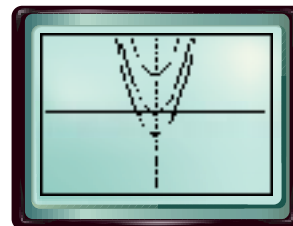
X,T,θ x^2 + 5 ENTER

X,T,θ x^2 - 3 ENTER

STEP 3

Graph the equations in the standard viewing window.

Keystrokes: ZOOM 6



EXERCISES

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Graphing Calculator Investigation

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Casio CFX-9850GB PLUS

What You'll Learn

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Families of Quadratic Functions

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ACTIVITY

Graph $y = x^2$, $y = x^2 + 5$, and $y = x^2 - 3$ on the same screen.

STEP 1

Clear any existing equations from the $Y=$ list.

Keystrokes: From the Main Menu, press 5 **F2** **F1**.

STEP 2

Enter each equation.

Keystrokes: **X,θ,T** **x²** **EXE**

X,θ,T **x²** **+** **5** **EXE**

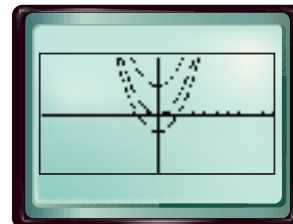
X,θ,T **x²** **-** **3** **EXE**

STEP 3

Graph the equations in the standard viewing window.

Keystrokes: **SHIFT** [**V-Window**]

F3 **EXE** **F6**



EXERCISES

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Casio ALGEBRA FX 2.0

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ACTIVITY

Graph $y = x^2$, $y = x^2 + 5$, and $y = x^2 - 3$ on the same screen.

STEP 1

Clear any existing equations from the $Y=$ list.

Keystrokes: From the Main Menu, press 3 **F2** **EXE**.

STEP 2

Enter each equation.

Keystrokes: **X,θ,T** **x²** **EXE**

X,θ,T **x²** **+** **5** **EXE**

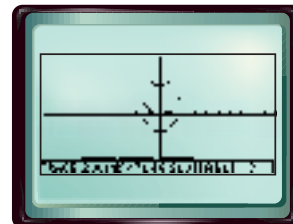
X,θ,T **x²** **-** **3** **EXE**

STEP 3

Graph the equations in the standard viewing window.

Keystrokes: **SHIFT** [**V-Window**]

F3 **EXE** **F5**



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Sharp EL-9600c

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ACTIVITY

Graph $y = x^2$, $y = x^2 + 5$, and $y = x^2 - 3$ on the same screen.

STEP 1 Clear any existing equations from the $Y=$ list.

Keystrokes: $\boxed{Y=}$ \boxed{CL}

STEP 2 Enter each equation.

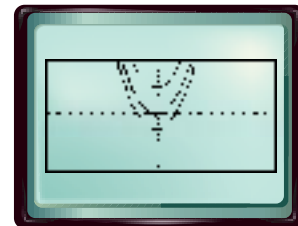
Keystrokes: $\boxed{X/\theta/T/n}$ $\boxed{x^2}$ \boxed{ENTER}

$\boxed{X/\theta/T/n}$ $\boxed{x^2}$ $\boxed{+}$ $\boxed{5}$ \boxed{ENTER}

$\boxed{X/\theta/T/n}$ $\boxed{x^2}$ $\boxed{-}$ $\boxed{3}$ \boxed{ENTER}

STEP 3 Graph the equations in the standard viewing window.

Keystrokes: \boxed{ZOOM} $\boxed{5}$



EXERCISES

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Sharp EL-9900

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ACTIVITY

Graph $y = x^2$, $y = x^2 + 5$, and $y = x^2 - 3$ on the same screen.

STEP 1

Clear any existing equations from the $Y=$ list.

Keystrokes: $Y=$ CL

STEP 2

Enter each equation.

Keystrokes: $X/\theta/T/n$ x^2 $ENTER$

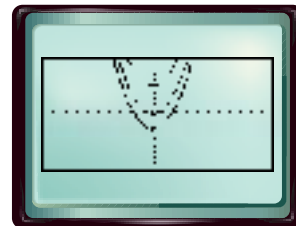
$X/\theta/T/n$ x^2 $+$ 5 $ENTER$

$X/\theta/T/n$ x^2 $-$ 3 $ENTER$

STEP 3

Graph the equations in the standard viewing window.

Keystrokes: $ZOOM$ 5



EXERCISES

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