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Linear and Nonlinear Functions

$$f(x) = ax^3 + bx^2 + cx + d$$
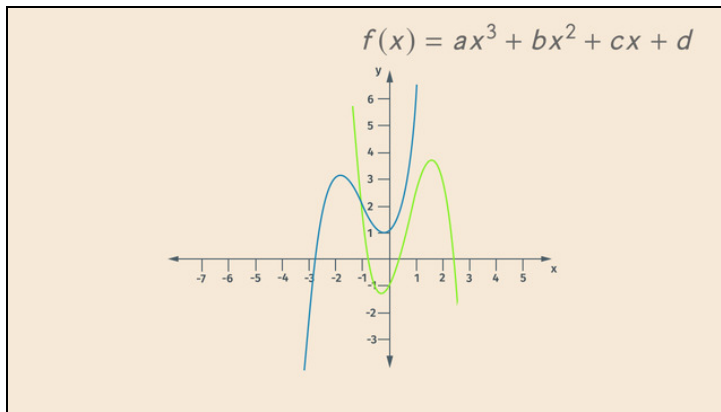
(1) **Identify the parameters of the given linear function.**

(2) Define a quadratic function.

(3) Decide which functions are linear functions.

(4) Determine the right function for the graph.

(5) Find the graphs of the given functions.

(+) with lots of tips, answer keys, and detailed answer explanations for all of the problems.

⚠ The complete package, **including all problems, hints, answers, and detailed answer explanations** is available for all sofatutor.com subscribers.

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Worksheet: Linear and Nonlinear Functions
Mathematics / Algebra 1 / Functions and Relations / Linear and Nonlinear Functions

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of 5

Identify the parameters of the given linear function.

Choose the correct statements.

$$f(x) = 4x + 22$$

A
☐ The graph of a $f(x)$ is a line.

B
☐ The slope of $f(x)$ is given by $m = 4$

C
☐ The graph of $f(x)$ is a decreasing line.

D
☐ The y-intercept of $f(x)$ is 4.

E
☐ The y-intercept of $f(x)$ is 22.

Hints for solving these problems

Identify the parameters of the given linear function.

Hint #1

In general, the slope intercept form of a linear function is given by $f(x) = mx + b$.

Hint #2

The term where x as a factor is the slope.

Hint #3

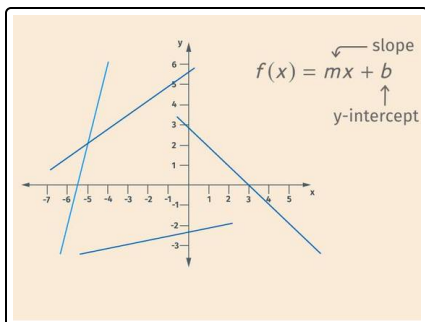The term where x is not a factor is the y-intercept.

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Answers and detailed answer explanations for these problems

1 of 5 Identify the parameters of the given linear function.

Answer key: A, B, E

We are analyzing the linear function $f(x) = 4x + 22$.

The graph of a linear function is a line. For our function $f(x)$ specifically, we can see that:

- $m = 4$ is the slope.
- The graph of $f(x)$ is increasing; in general, a line is increasing when it has a positive slope, and decreasing when it has a negative slope.
- $b = 22$ is the y-intercept.

In the graph to the right, you see different lines. Just one, the most right one, is decreasing. Thus the corresponding slope is negative. For all the other lines, the slope is positive.

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