

## Non-Linear Models

1

The table below shows examples of linear and non-linear equations.

**Equation Examples**

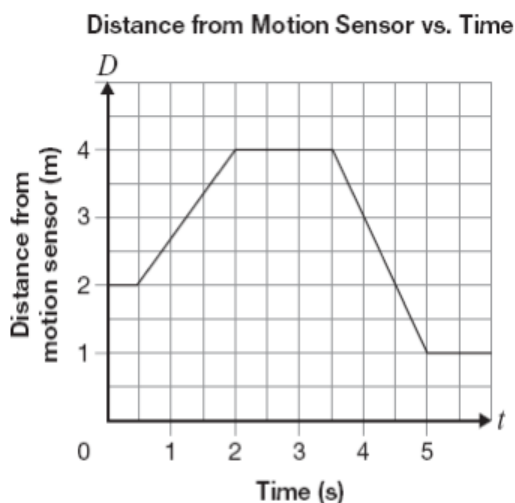
Linear equations	Non-linear equations
$y = 5x - 3$	$y = 5x^2 - 3$
$y = 125 - 4.25x$	$y = 2x^3$
$y = -3x$	$2x^2 + 5y^2 = 10$

Which of these statements best describes how linear equations are different from non-linear equations in the table above?

- a The exponent of both variables in the linear equations is 1.
- b The exponent of exactly one variable in the linear equations is 1.
- c The exponent of both variables in the non-linear equations is 1.
- d The exponent of exactly one variable in the non-linear equations is 1.

3

Tyler walks along a line leading from a motion sensor. The graph below shows information about Tyler's walk.



Which of the following is closest to Tyler's speed in metres per second as he walks toward the motion sensor?

- a 2.0
- b 1.3
- c 0.8
- d 0.5

2

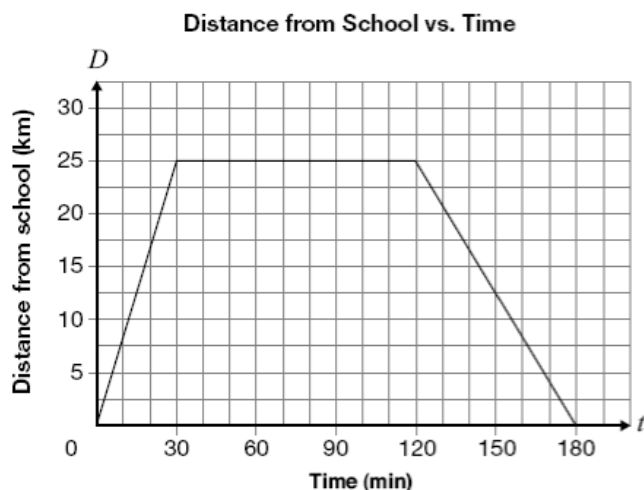
Which of the following equations does **not** represent a linear relation?

- a  $x = -2$
- b  $y = 3x - 1$
- c  $y = x^2 + 3$
- d  $3x - 2y - 1 = 0$

A

### **Dogs Versus Cats**

The Bryant Bulldogs basketball team takes the bus to play the Jordan High Thundercats.

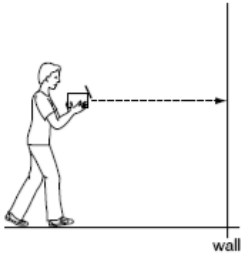


Describe the three parts of the Bulldogs' bus trip, using the information on the graph.

Include information about distance, time, direction and speed in kilometres per minute for each section of the graph.

4

In an investigation, a student holds a motion detector, points it at a wall and walks toward the wall.



The student walks slowly at first and then speeds up as he approaches the wall.

Which of the following graphs would be produced on the graphing calculator?

