

1.2 Patterns and Non-Linear Functions

Take note **Concept Summary** **Linear and Nonlinear Functions**

Linear Function
A linear function is a function whose graph is a nonvertical line or part of a nonvertical line.

Nonlinear Function
A nonlinear function is a function whose graph is not a line or part of a line.

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Problem 1 **Classifying Functions as Linear or Nonlinear**

Pizza The area A , in square inches, of a pizza is a function of its radius r , in inches. The cost C , in dollars, of the sauce for a pizza is a function of the weight w , in ounces, of sauce used. Graph these functions shown by the tables below. Is each function *linear* or *nonlinear*?

Pizza Area	
Radius (in.), r	Area (in. ²), A
2	12.57
4	50.27
6	113.10
8	201.06
10	314.16

Handwritten notes: A, B, 38.3, 27.7, 19.9

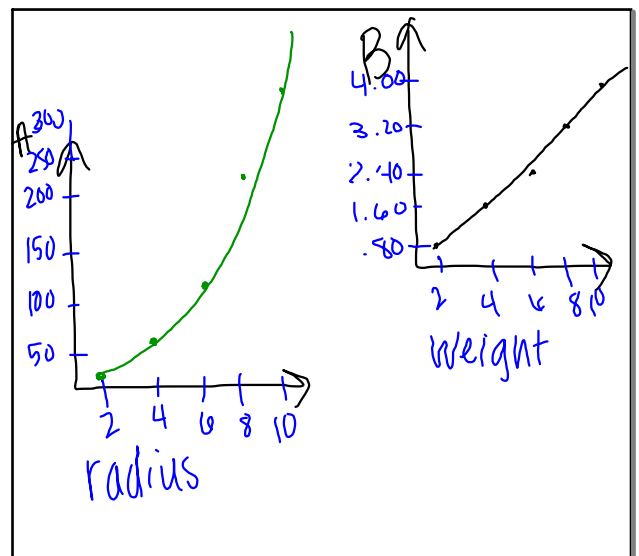
Sauce Cost	
Weight (oz), w	Cost, C
2	\$0.80
4	\$1.60
6	\$2.40
8	\$3.20
10	\$4.00

Handwritten notes: .80, .80, .80

Know The relationships shown in the tables are functions. **Need** To classify the functions as linear or nonlinear **Plan** Use the tables to make graphs.

Graph A as a function of r . **Non-Linear** Graph C as a function of w . **Linear**

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