

Different Representations of Functions

Date _____

Period _____

Decide if the situation is modeling: Linear, Quadratic, Exponential, or something Other. Then explain why with 1 sentence.

- 1) The population of a town is decreasing at a rate of 1.5% per year.

Exp. - Percentage

- 2) Each point on a graph is exactly $\frac{2}{5}$ of the previous point.

Exp. - multiply by $\frac{2}{5}$

- 3) The average annual cost of car insurance in the Philippines is initially 50,000 Philippine pesos. Each year it decreases by 4,000 pesos.

Linear Subtract 4,000 each time

- 4) A person starts off a race increasing their speed at a constant rate, then plateaus their speed for the majority of the race, then speeds up at the end once the finish line is in sight.

Other - increase then constant then increase.

- 5) The area of a poster with length $(x - 5)$ inches and width $(x + 1)$ inches.

Quad: $\overset{l \cdot w}{(x-5)(x+1)}$ factored.

- 6) Your cell phone plan charges you \$35 per month (just to have an active phone plan) plus \$0.25 per megabyte of data you use.

Linear: $0.25x + 35$

- 7) You have received a new job! The company will start you with \$35,000 but you will receive a 10% raise every year that you continue employment with them.

Exp. - Percentage.

- 8) A rocket is launched from the ground and lands in a field 50 yards away. *Think about the path the rocket takes.

Quadratic: Parabola.

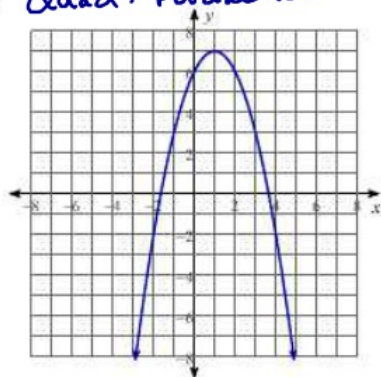
9) $y = \frac{4}{x}$ Other:
Rational Function

10) $y = 1 - x^2$ Quad:
 $x^2 \leftarrow$

11) $y = \frac{4}{3}x$ Linear:
 $mx + b$
 $m = \frac{4}{3}$

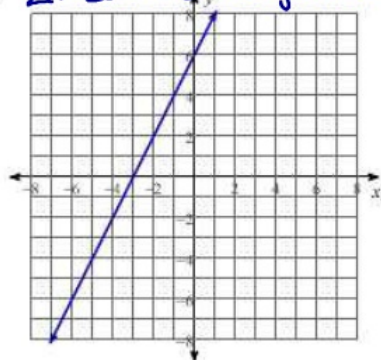
12) x: -2 -1 0 1 2 3
y: 25 16 9 4 1 0
-9 -7 -5 -3 -1
2nd Diff: +2 +2 +2 +2
Quadratic.

13) Quad: Parabola



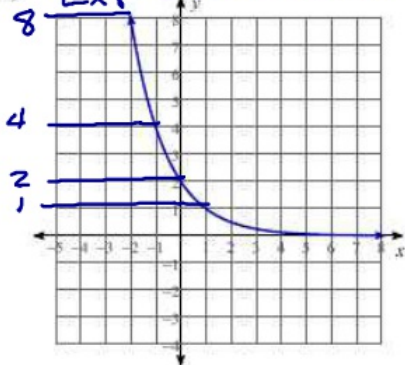
14) Lee has \$25 withheld from his paycheck every week to pay for his subway pass.
Linear: Subtract 25

15) Linear: Straight Line



16) Jose owes his brother \$500. He has promised to pay half of what he owes each week until the debt is paid.
Exp. multiply by $\frac{1}{2}$

17) Exp. Smooth Curve



18) x: -2 -1 0 1 2 3

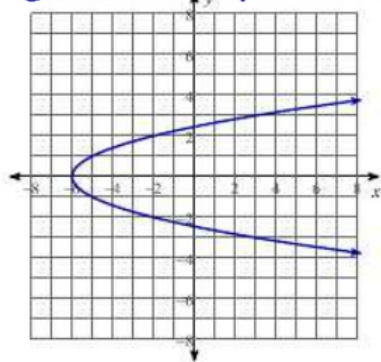
y: 12 6 3 1.5 0.75 0.375

\swarrow \swarrow \swarrow \swarrow
 -6 -3 -1.5 -0.75
 \swarrow \swarrow \swarrow
 -3 -1.5 -0.75

$$\frac{6}{12} = \frac{1}{2} \quad \frac{3}{6} = \frac{1}{2} \quad \frac{1.5}{3} = \frac{1}{2}$$

Exp. factor of $\frac{1}{2}$

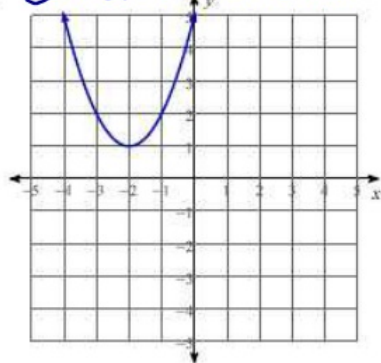
19) Other: Not a function



20) $y + x = 4x + 5$

Linear: no exp.

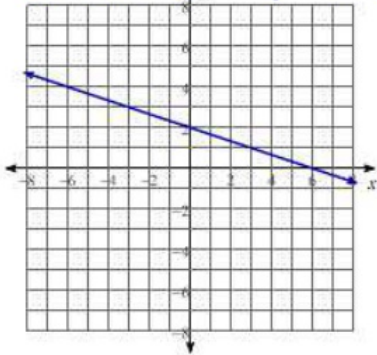
21) Quad: Parabola



22) $y = 3(x - 5)^2 - 9$

Quad: Vertex form.

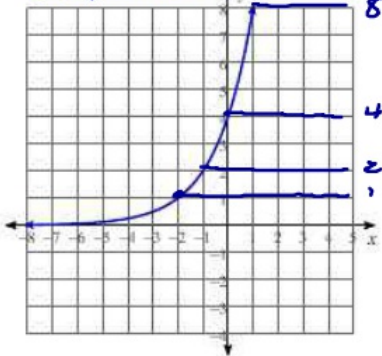
23) Linear: Straight Line



24) $y = 5 \cdot 1.26^x$

Exp. x in exp

25) Exp. Smooth Curve

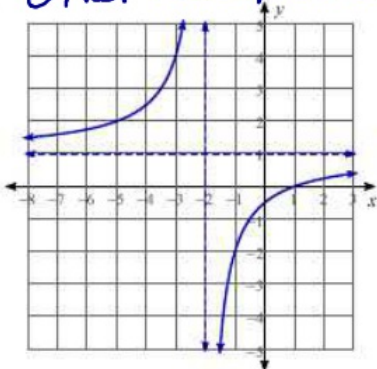


26) x: -2 -1 0 1 2 3

y: $\underbrace{-3}_{+7}$ $\underbrace{4}_{1}$ $\underbrace{5}_{1}$ $\underbrace{6}_{7}$ $\underbrace{13}_{19}$ $\underbrace{32}$

Other:

27) Other: asymptotes



28) $y = 3|x + 5| - 7$

Other: abs. Value. Function.