

For each problem given, tell all of the following:

- Function or not
- Whether it is linear, quadratic, exponential or none of the above.
- Describe how each graph is growing (moving)
- Create at least one way to represent it (graph, table, picture, equation)

1) A plumber charges a base fee of \$55 for a service call plus \$35 per hour for each hour worked during the service call. Figure out the relationship between the total price of the service call and the number of hours worked

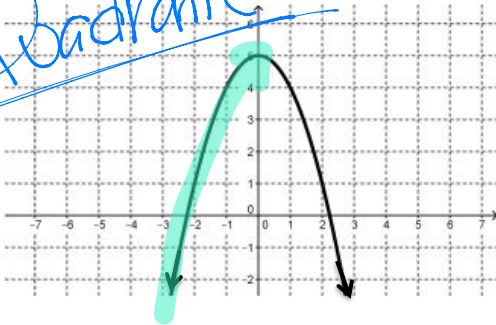
linear

| | | | | | | | | |
|---|----|----|-----|-----|-----|-----|-----|-----|
| x | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| y | 55 | 90 | 125 | 160 | 195 | 230 | 265 | 300 |

$y = 55 + 35x$

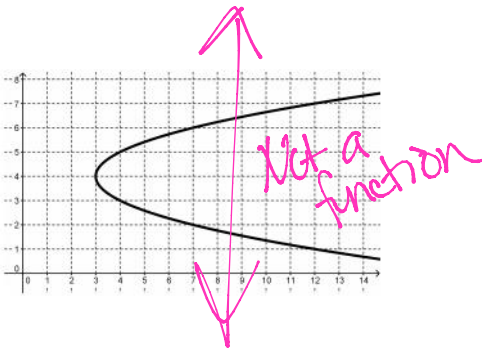
going up by \$35
slope: +35

2) Quadratic



Dom: $(-\infty, \infty)$ Range: $(-\infty, 5]$ max/min: $(0, 5)$
 Y-int: $(0, 5)$ Vertex: $(0, 5)$ A.O.S.: $x = 0$
 Incr: $(-\infty, 0)$ Decr: $(0, \infty)$ Direc: Down
 End Beh: $x \rightarrow -\infty \quad y \rightarrow -\infty$ $x \rightarrow \infty \quad y \rightarrow -\infty$ Disc/Cont? Cont

3)



Linear

5)

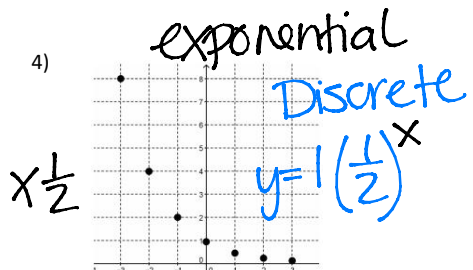
$y = \frac{1}{3}(x - 2) + 4$

| | | | | | | |
|---|----------------|----------------|---|----------------|----------------|---|
| x | 0 | 1 | 2 | 3 | 4 | 5 |
| y | $\frac{10}{3}$ | $\frac{11}{3}$ | 4 | $\frac{13}{3}$ | $\frac{14}{3}$ | 5 |

+ $\frac{1}{3}$ slope



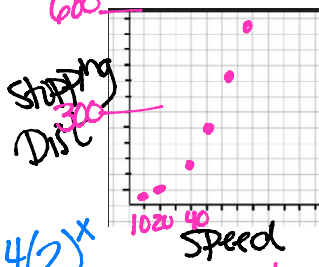
4)



| | | | | | | | |
|---|----|----|----|---|-----|------|-------|
| x | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| y | 8 | 4 | 2 | 1 | 0.5 | 0.25 | 0.125 |

6) The relationship between the speed of a car and the distance it takes to stop when traveling at that speed.

| Speed (mph) | Stopping Distance (ft) |
|-------------|------------------------|
| 10 | 12.5 |
| 20 | 50 |
| 30 | 112.5 |
| 40 | 200 |
| 50 | 312.5 |
| 60 | 450 |
| 70 | 612.5 |



exponential
Faster you go, longer you need to stop

7)

| x | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
|---|-----|----|----|---|---|----|----|
| y | 1/2 | 1 | 2 | 4 | 8 | 16 | 32 |

exponential

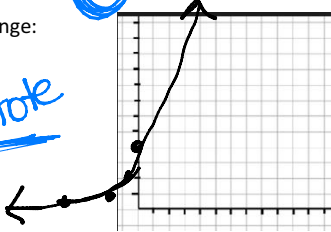
| x | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
|---|----|----|----|---|---|---|---|
| y | 0 | 5 | 8 | 9 | 8 | 5 | 0 |

Quadratic

Rate of change:

X2

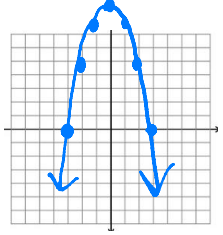
Asymptote



Rate of change:

Double diff
-2

variable



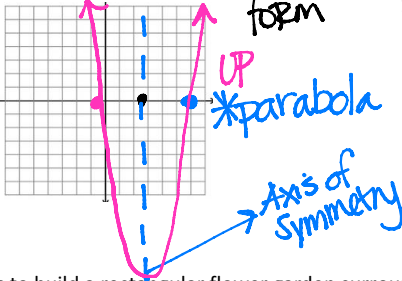
9) $y = (4x + 3)(x - 6)$ Quadratic - Intercept form

X-ints

$4x + 3 = 0$
 $x = -3/4$

$x - 6 = 0$
 $x = 6$

$4x = -3$
 $x = -0.75$



10) $y = (\frac{1}{3})^{x-2} + 4$ exponential

| x | 0 | 1 | 2 | 3 | 4 | 5 |
|---|----|---|---|------|------|--------|
| y | 13 | 7 | 5 | 13/3 | 37/9 | 101/27 |

Decay $x \frac{1}{3}$

11) Mary Bo Peep wants to build a rectangular flower garden surrounded by a walkway 4 meters wide. The flower garden will be 6 meters longer than it is wide.

a. What is the relationship between the width of the garden and the perimeter of the walkway?

$\frac{a+b+4+4}{\text{top}} = a+14$

$\frac{a}{\text{side}} + 4 + 4 = a+8$



b. What is the relationship between the width of the garden and area of the walkway?

$(4a+12)(4a+44) = \text{quadratic}$ Multiply

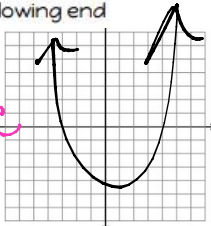
parabola

exponential

12) The graph has the following end behavior:

as $x \rightarrow \infty, y \rightarrow \infty$
as $x \rightarrow -\infty, y \rightarrow \infty$

Quadratic



13) There is an asymptote of $y=0$.

