

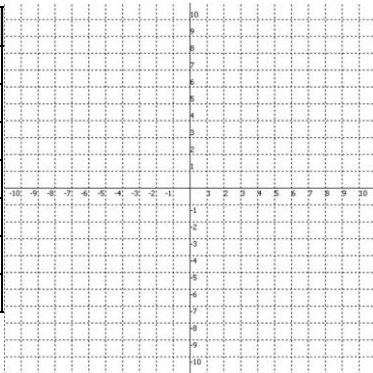
COMPARING FUNCTIONS

| Name of Function | General Shape of Graph | Sketch |
|------------------|------------------------|--------|
| Linear | | |
| Quadratic | | |
| Exponential | | |

Complete the following tables and answer the questions to the right.

(a)

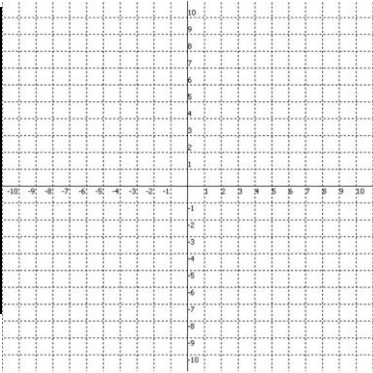
| x | y = 2x |
|----|--------|
| -3 | |
| -2 | |
| -1 | |
| 0 | |
| 1 | |
| 2 | |
| 3 | |



What type of function is this?

(b)

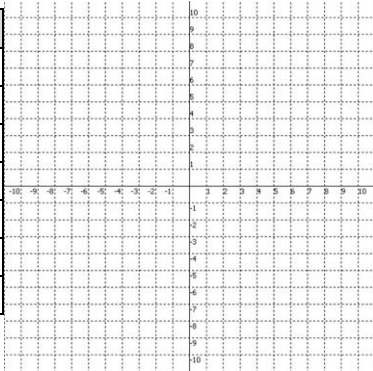
| x | y = x ² |
|----|--------------------|
| -3 | |
| -2 | |
| -1 | |
| 0 | |
| 1 | |
| 2 | |
| 3 | |



What type of function is this?

(c)

| x | y = 2 ^x |
|----|--------------------|
| -3 | |
| -2 | |
| -1 | |
| 0 | |
| 1 | |
| 2 | |
| 3 | |



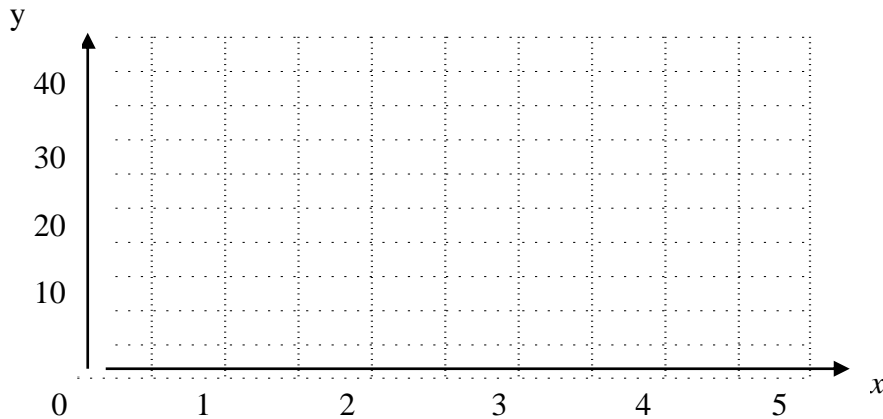
What type of function is this?

Identify the following equations as linear, quadratic or exponential.

| | |
|---|---|
| 1. $y = 10\left(\frac{1}{3}\right)^x$ <input type="checkbox"/> linear <input type="checkbox"/> quadratic <input type="checkbox"/> exponential | 2. $y = 5 + 7(x)$ <input type="checkbox"/> linear <input type="checkbox"/> quadratic <input type="checkbox"/> exponential |
| 3. $y = (x + 3)^2 - 4$ <input type="checkbox"/> linear <input type="checkbox"/> quadratic <input type="checkbox"/> exponential | 4. $y = -2(x) + 5$ <input type="checkbox"/> linear <input type="checkbox"/> quadratic <input type="checkbox"/> exponential |
| 5. $y = -\frac{1}{2}(3)^x$ <input type="checkbox"/> linear <input type="checkbox"/> quadratic <input type="checkbox"/> exponential | 6. $y = \frac{1}{3}(x)^2 - 4$ <input type="checkbox"/> linear <input type="checkbox"/> quadratic <input type="checkbox"/> exponential |

All _____ functions have _____.
 All _____ functions have a _____.
 All _____ functions must have a _____ in the _____.

Graph the functions $y = 2x$, $y = x^2$ and $y = 2^x$ on the same grid for $0 \leq x \leq 5$. **Label your graphs.**



Looking at the graphs above:

- Which function shows a constant rate of change in its y values?
How is this displayed on your graph?
- For $x < 4$, which function shows the fastest rate of change in its y values?
How is this displayed on your graph?
- Eventually, which type of function shows the most rapid rate of growth in its y values?
How is this displayed on your graph?