

EXPONENTIAL FUNCTIONS Graphing

Name Key

Period _____ Date _____

$$y = a \cdot b^x$$

a → initial value
 b → base growth/decay factor

Example: $y = 20 \cdot 2^x$

| x | y |
|----|----|
| -2 | 5 |
| -1 | 10 |
| 0 | 20 |
| 1 | 40 |
| 2 | 80 |

$$y = a \cdot b^{x-h} + k$$

Example: $y = 20 \cdot 2^{x-1} + 10$

| x | y |
|----|------|
| -2 | 12.5 |
| -1 | 15 |
| 0 | 20 |
| 1 | 30 |
| 2 | 50 |

Exponential Growth:

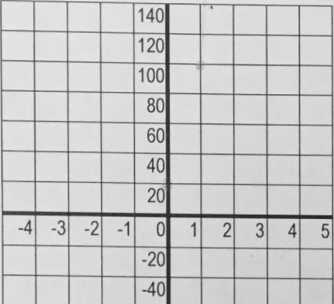
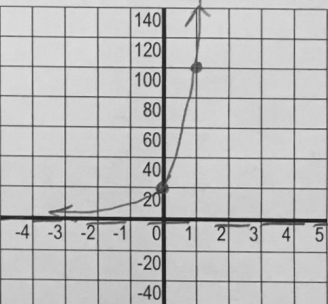
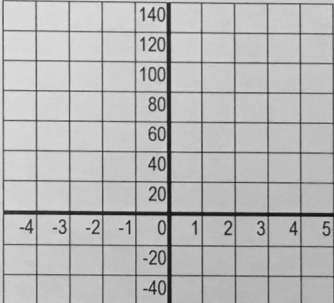
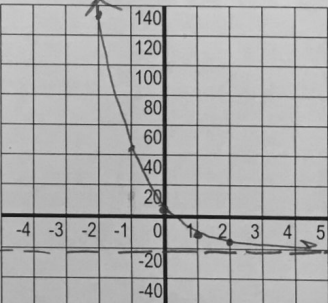

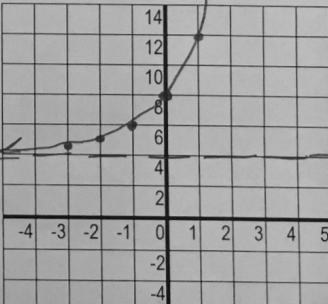
Graph $y = 3 \cdot 2^x$

asymptote: $y = 0$
 domain: $(-\infty, \infty)$
 range: $(0, \infty)$

Exponential Decay:

Graph $y = 3 \cdot 0.5^x$

asymptote: $y = 0$
 domain: $(-\infty, \infty)$
 range: $(0, \infty)$

| Graph... | "Scratchwork" (if you need/want it) | Final answer | Identify... |
|--|---|--|---|
| <p>1. $y = 4 \cdot 5^{x+1}$</p> <p>Growth</p> |  |  | <p>asymptote: $y = 0$</p> <p>domain: $(-\infty, \infty)$</p> <p>range: $(0, \infty)$</p> |
| <p>2. $y = 4 \cdot 0.4^{x-2} - 20$</p> <p>Decay</p> |  |  | <p>asymptote: $y = -20$</p> <p>domain: $(-\infty, \infty)$</p> <p>range: $(-20, \infty)$</p> |
| <p>3. $y = 0.5 \cdot 2^{x+3} + 4$</p> <p>Growth</p> |  |  | <p>asymptote: $y = 4$</p> <p>domain: $(-\infty, \infty)$</p> <p>range: $(4, \infty)$</p> |