

Name:
Instructor:

Date:
Section:

Practice Set 9.2

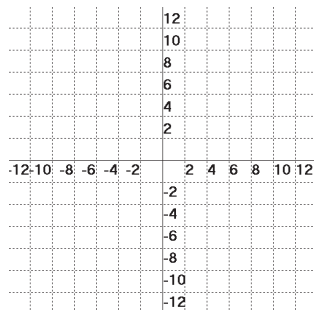
Use the choices to fill in each blank.

- | | | | | |
|-----------|---------------------|----------------|----------|-------------|
| increases | $(-\infty, \infty)$ | $(-\infty, 0)$ | $(0, 0)$ | complex |
| decreases | $(0, \infty)$ | $(0, 1)$ | $(1, a)$ | exponential |

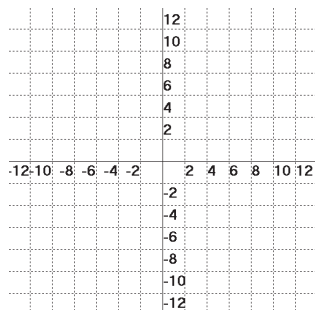
- For any real number $a > 0$ and $a \neq 1$, $f(x) = a^x$ is called a(n) _____ function.
- Consider the exponential function $y = 2^x$: as x increases, y _____.
- Consider the exponential function $y = \left(\frac{1}{2}\right)^x$: as x increases, y _____.
- For all exponential functions of the form $y = a^x$ where $a > 0$ and $a \neq 1$, the domain of the function is _____, the range of the function is _____, and the graph of the function passes through the points $\left(-1, \frac{1}{a}\right)$, _____, and _____.

Graph each exponential function.

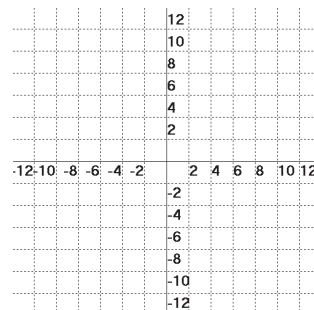
5. $f(x) = 2^x$



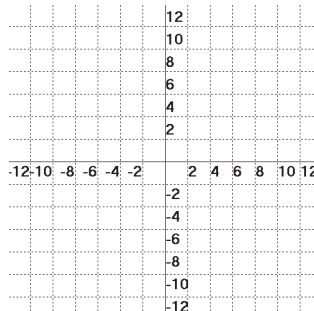
6. $y = 4^x$



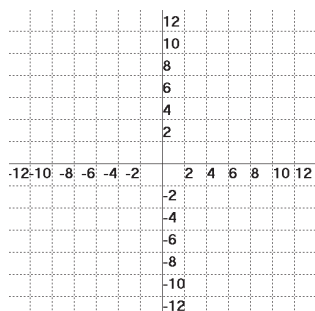
7. $f(x) = 2^{x-1}$



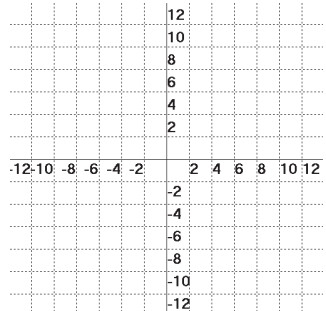
8. $y = \left(\frac{1}{2}\right)^x$



9. $y = \left(\frac{1}{4}\right)^x$



10. $y = 2^x - 1$



Problem Solving

- Find the amount in the account after 5 years if \$2000 is invested at 3.5% interest compounded quarterly. 11. _____
- If 10 grams of carbon 14 are originally present in a certain animal bone, how much will remain at the end of 1000 years? 12. _____
- The exponential function $f(t) = \frac{1}{2}(2.718)^{0.0072t}$ closely approximates the world population, $f(t)$ in billions, where t is the number of years since 1650. Estimate the world population in 2012. 13. _____