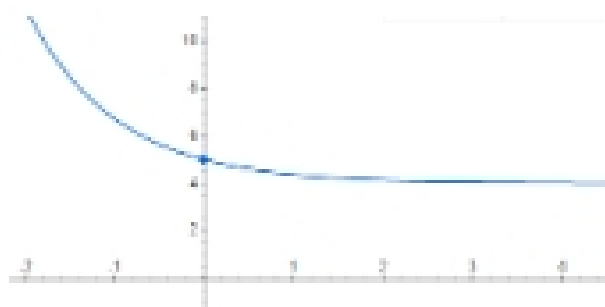


1. True or False
 - (a) If $b^x = b^y$ then $x = y$
 - (b) The function $y = x^x$ is an exponential function.
 - (c) The graph of an exponential function must cross at least one axis.
 - (d) The domain of $y = e^x$ is all positive real numbers and the range is all real numbers.
 - (e) The function $y = \pi^x$ is an exponential function.
2. Find the long-term behavior of $3^x + x^3 - 4x + 4$.
3. Solve $4^{2x^2+2x} = 8$ without logarithms.
4. Graph $g(x) = -2^{x+1} - 5$ using a sequence of transformations. Make sure to label any asymptotes and the y -intercept.



5. Choose the function of the graph

(a) $f(x) = -e^x + 4$	(c) $f(x) = e^{-x} + 4$	(e) None of the above
(b) $f(x) = e^x + 5$	(d) $f(x) = -e^{-x} + 5$	
6. Find a value of x that will make 2^{x+2} equal to 1.
7. Determine the long-term behavior, intercepts, and asymptotes of $f(x) = a \cdot e^x$. You will need to consider different options for a .
8. Solve $16^{2x}(\frac{1}{2})^x = (2^x \cdot 2)^3$ without logarithms.
9. If f and g are inverses and $f(-2) = 6$,

(a) what value of g do we know?	(b) What is $f(g(6))$?
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10. If f and g are inverses, what is $f(g(x))$ and $g(f(x))$?
11. Suppose f is a function that has an inverse and f has the following values. Find $f^{-1}(2)$.

$$f(1) = 4f(-1) = 2f(0) = 3f(-2) = -5f(2) = 11.$$
12. Show that $f(x) = 2x + 1$ and $g(x) = \frac{x-1}{2}$ are inverses.

13. We know f^{-1} sends outputs of f to inputs of f .
- (a) What condition on f^{-1} do we need for f^{-1} to be a function?
 - (b) What condition does this imply for f ? (We call this one-to-one)
 - (c) How can we graphically determine if f has an inverse function? Hint: think what happens to vertical and horizontal lines when they are reflected over $y = x$
14. Given $f(x) = 2x^3 + 5$
- (a) Find a formula for $f^{-1}(x)$
 - (b) State the domain and range of f and f^{-1}
 - (c) Graph f and reflect it over the line $y = x$ to get a graph of f^{-1} .
15. Given $f(x) = x^2 + 1$ and $g(x) = \sqrt{x - 1}$
- (a) State the domain of g .
 - (b) Show $f(g(x)) = x$ when $x \geq 1$
 - (c) Graph f and g on the same plane.
 - (d) When is it true that $g(f(x)) = x$
 - (e) Are f and g inverse functions? If not, can you restrict the domain of f such that f and g are inverse functions.
16. Write a test question (or two) over this material.

An Ending Thought: *Nothing is impossible, the word itself says "I'm possible!"*
– Audrey Hepburn