# Chapter 1 Test

1. Answer true or false. The sine is an odd function.
2. Answer true or false. The cosine is an odd function.
3. Answer true or false. The power function with an odd exponent is an even function.
4. Answer true or false. There exists a function that is both even and odd.
5. Answer true or false. The natural exponential function is invertible.
6. Answer true or false. When the period of is , the period of is .
7. Answer true or false. The exponential function has no -intercept.
8. Answer true or false. The function's graph cannot cross its asymptotes.
9. Answer true or false. .
10. Answer true or false. The number is equal to .
11. A clipping from the graph of , where is an integer, is shown.



Based on this clipping …

* 1. the exponent is odd and positive,
  2. the exponent is even and positive,
  3. the exponent is odd and negative,
  4. the exponent is even and negative,
  5. we cannot determine the parity and/or polarity of .

1. Suppose that . Select the most accurate of the statements below.
   1. The graph of has vertical asymptote(s).
   2. The graph of has a horizontal asymptote.
   3. The graph of has vertical asymptote(s) and a horizontal asymptote.
   4. The graph of has no horizontal or vertical asymptotes.
2. The wavelength of is …

   2. none of the above
3. Determine which of the following equations are correct.
   1. both equations (a) and (b) are correct
   2. neither equation is correct
4. Use the parity, polarity, and magnitude that you see in the exponent to compare and contrast the way that and change when moves away from zero.
5. Use your understanding of parity to determine the behavior of the polynomial

for large .

1. Sketch a rough graph of the polynomial based on its behavior near its roots, the sign of the leading term, and the degree of the polynomial.
2. Sketch a rough graph of the polynomial based on its behavior near its roots, the sign of the leading term, and the degree of the polynomial.
3. Determine/design a polynomial function whose graph could be the one shown below:



1. Determine the behavior of the function for large .
2. Determine the behavior of the function for large .
3. Sketch a graph of the function .
4. Sketch a graph of the function .
5. For , find (a) equations of all vertical asymptotes (if any), (b) an equation of the horizontal asymptote (if any), (c) the slope of the oblique asymptote (if any)
6. For , find (a) equations of all vertical asymptotes (if any), (b) an equation of the horizontal asymptote (if any), (c) the slope of the oblique asymptote (if any)
7. For , find (a) equations of all vertical asymptotes (if any), (b) an equation of the horizontal asymptote (if any), (c) the slope of the oblique asymptote (if any)
8. For and determine a formula for (a) , and (b) .
9. Sketch the graph of the piecewise defined function .
10. Sketch the graph of .
11. For , sketch and on the same axes.
12. Determine the wavelength, angular frequency, and speed of the traveling wave .
13. Use the properties of exponents to rewrite as an exponential function whose base is larger than one.
14. Suppose that and . Which function decreases faster as becomes more and more positive?
15. Evaluate without using a calculator.
16. Use a calculator to determine .
17. Solve the equation .
18. Without a calculator, determine which of and is larger.
19. Evaluate without a calculator.
20. Rewrite without trigonometric functions.
21. Find a formula for for .

# Answers

1. true
2. false
3. false
4. true
5. true
6. false
7. true
8. false
9. false
10. true
11. (d)
12. (c)
13. (a)
14. (b)
15. and both move away from , curving downward on the right; has a range of all real numbers, but is non-negative
16. As , ; as ,





2. As ,
3. As ,





1. (a) , (b) , (c) none
2. (a) none, (b) none, (c)
3. (a) , , , (b) , (c) none
4. (a) , (b)







1. , ,
2. ,