MATH 2412 – Precalculus – Final Exam Review Pt. 2 – Exam 4
Work these on separate paper and do not write on this sheet.
You must show your work.

Each problem represents a concept to review

EXAM 4

50) Let \( f(x) = \sqrt{1 + \sqrt{x}} \). Find \( f^{-1}(x) \)

51) Let \( g(x) = x^2 - 1 \), \( h(x) = 3x - 1 \), and \( k(x) = \sqrt{6x} \)
   a) Find and simplify \( g(x)/(h(x))^2 \)
   b) Give the domain of \( k(h(x)) \)

52) Decompose \( f(x) \) into \( u(m(x)) \) where \( u(x) \neq x \) and \( m(x) \neq x \): \( f(x) = e^{2x} + 2x \)

53) If \( n(x) = g(f(x)) \), complete the table for \( n(x) \)

<table>
<thead>
<tr>
<th>( x )</th>
<th>( f(x) )</th>
<th>( g(x) )</th>
<th>( n(x) )</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
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<td>3</td>
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<tr>
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</tbody>
</table>

54) Find the power function that goes through the points (2, 96) and (4, 3072)

55) Find the zeros of the polynomial function:
   \( g(x) = 4x^4 - 21x^2 + 5 \)

56) Find the formula of the polynomial shown in the graph.

57) Evaluate: \( \lim_{x \to \infty} (-3x^4 + 5x^3 - 2x^2 + 11) \)

58) Evaluate: \( \lim_{x \to \infty} \left( \frac{4x^3 - 2x^2}{8x^5 - 3} \right) \)

59) For the rational function: \( f(x) = \frac{6x - 3}{8 - 2x} \)
   a) Find the zero(s)
   b) Find the vertical asymptote(s)
   c) Find the horizontal asymptote
   d) Sketch a graph

60) For the parametric equations: \( x = \ln t \quad y = t^2 \quad 1 \leq t \leq 4 \)
   a) Graph the parametric equations over the given domain
   b) Find an equation involving \( x \) and \( y \) only (eliminate \( t \))

61) For the ellipse shown below:
   a) Give the coordinates of the center and give the values of \( a \) and \( b \)
   b) Find an implicit equation (using \( x \) and \( y \))

62) Evaluate: \( \lim_{x \to \infty} \left( \frac{125x^5 + 2x^4 + 5}{6^x - 34} \right) \)