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| Test 1Dusty Wilson Math 111 No work = no credit  No Symbolic Calculators | **Name:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  *Why are numbers beautiful? It's like asking why is Beethoven's Ninth Symphony beautiful. If you don't see why, someone can't tell you. I know numbers are beautiful. If they aren't beautiful, nothing is.*  Paul Erdos (1913 - 1996)  Hungarian mathematician |

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| Warm-ups (1 pt each): | =\_\_\_\_\_ | =\_\_\_\_\_ | =\_\_\_\_\_ |

(1 pt) Based upon the quote above, how did Erdos explain the beauty of numbers? Answer using complete English sentences.

(4 pts) Find the exact solution to: 

Solution: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Solution: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(4 pts) If , find 

Solution: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(7 pts) Use the graph to answer the following:

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| 1. Find : \_\_\_\_\_\_\_\_\_\_\_\_ |  |
| 1. Find : \_\_\_\_\_\_\_\_\_\_\_\_ |
| 1. What is the maximum of *f*. : \_\_\_\_\_\_\_\_\_\_\_ |
| 1. Give the domain of *f* in interval or inequality notation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |
| 1. Give the range of *f* in interval or inequality notation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |

(4 pts) Find and interpret market equilibrium for the following supply and demand functions:  and . Use algebraic methods.

Solution: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(4 pts) Suppose a manufacturer models its monthly costs with  where *x* is in units produced in a month and *C* is in dollars.

1. Find and interpret the *C*-intercept.
2. Find and interpret the slope.

(4 pts) Find a good viewing window for 

(4 pts) If  and  , find 

Solution: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(8 pts) A street vendor sells Seahawk Super Bowl *XLIX* champion t-shirts for $25 per shirt. The fixed costs are $1500 and the variable costs of are $5 per shirt.

1. Define the variable(s)
2. Write the equation of the revenue function
3. Write the equation of the cost function
4. Find and interpret the break-even point(s)