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| Assessment 7Dusty Wilson Math 220No work = no credit**Non CAS Calculators allowed** | **Name**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*Television is something the Russians invented* *to destroy American education..*Paul Erdős1913 - 1996 (Hungarian mathematician) |

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

(1 pt) Do you think that Erdős (pronounced Air-Dersh) was serious in the quote above? What point was he trying to make?

(8 pts) Assume that matrix *A* is row equivalent to *B* (below). Find the following:

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| a.) Find a basis for the column space of *A*. | b.) Find a basis for the row space of *A*. |
| c.) Find the null space of *A*. | d.) rank(*A*) = \_\_\_\_\_ and nullity(*A*) = \_\_\_\_ |

(4 pts) Let  and . Find the change-of-coordinates matrix from *B* to *C*.

(6 pts) Define the following:

1. What does it mean if  are linearly independent?
2. What is the span of .
3. How do we know if are a basis for a subspace *V* of ?

(4 pts) Let  and  be bases for a vector space *V* and let , , and . Find  for 

(4 pts) Show that the set *H* of all matrices of the form  are a subspace of (the space of all 2x2 matrices).