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| Assessment 5 (10 or 11 am)Dusty Wilson Math 220 No work = no credit **No Calculator** | **Name (first & last)**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  *It is true that a mathematician who is not also something of a poet will never be a perfect mathematician.* Karl Weierstrass 1815-1897 (German mathematician) |

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

(1 pt) According to Weierstrass (above), what is an additional (perhaps unexpected) quality required if one is to be a perfect mathematician? Please answer using complete sentences.

(7 pts) For the matrix , there are at least 13 statements equivalent to, “*A* is invertible.” List at least seven of them. List more for extra credit (2 points max).

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| i.) *A* is invertible. | vi.) |
| ii.) | vii.) |
| iii.) | viii.) |
| iv.) | ix.) (1 pt extra credit) |
| v.) | x.) (1 pt extra credit) |

(4 pts) Is the matrix  invertible? Justify your answer.

(3 pts) What properties must *H* satisfy if it is to be a subspace?

(4 pts) Prove/disprove that the set  is a subspace using the properties of a subspace. Hint: This is the union of the 2nd and 4th quadrants.

(4 pts) Prove/disprove that the set  is a subspace using the properties of a subspace.

(4 pts) Calculate the determinant 