Ingeniørhøjskolen Århus

Discrete Mathmatics

Hand in 3

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Problems

1 Which of the following sets are well-ordered? (Why/why not?)

a. $S = x \in \mathbb{Q} \ : \ x \leq -10$
b. $S = -2, -1, 0, 1, 2$
c. $S = x \in \mathbb{Q} \ : \ -1 <= x <= -10$
d. hest

2 Let $a, b \in \mathbb{Z}$ Disprove the statement: if ab and $(a + b)^2$ are of opposite parity, then a^2b^2 and a+ab+b are of opposite parity.

3 Let $a, b \in \mathbb{R}^+$. Use a proof by contradiction to prove that x<y, then $\sqrt{x} < \sqrt{y}$

4 Prove that there is no largest negative rational number.

5 Prove that there exists no positive integer x such that 2x $< x^2 <$ 3x.

6 Prove that if n is an odd integer, then 7n-5 is even by