Assignment 1

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- Problem 2.

  a The left side of the equation is: $(X \implies Y) \vee (X \implies Z)$
  $\equiv (\neg X \vee Y) \vee (\neg X \vee Z)$ Condition Identity
  $\equiv (\neg X \vee Y \vee \neg X) \vee (\neg X \vee Y \vee Z)$ Associative Property
  $\equiv (\neg X \vee Y) \vee (\neg X \vee Y \vee Z)$ Idempotent Identity
  $\equiv (\neg X \neg X \vee Y \vee Y) \vee (Z)$ Associative Identity
  $\equiv (\neg X \vee Y) \vee (Z)$ Idempotent Identity
  $\equiv \neg X \vee (Y \vee Z)$ Associative Identity
  $\equiv X \implies (Y \vee Z)$ Conditional Identity

  b Starting from the left side again: $(P \iff Q) \equiv (P \implies Q) \wedge (Q \implies P)$ Biconditional Identity
  $\equiv (P \implies Q) \wedge (\neg Q \vee P)$ Conditional Identity
  $\equiv (P \implies Q) \wedge (\neg(\neg P) \vee \neg Q)$ Commutative and Double Negative Properties
  $\equiv (P \implies Q) \wedge (\neg P \implies \neg Q)$ Conditional Identity

  c Blah