Lesson 2.8.2: Direct and Indirect Proofs

Total points = 30

A. Direct proof

1. Statements
   1. Given ✓
   2. Subtraction Property✓
   3. Simplification✓
2. Statements
   1. Given✓
   2. Given✓
   3. Transitive Property✓
   4. Subtraction Property✓
   5. Simplification✓
3. Statements
   1. Given ✓
   2. Definition of linear pair ✓
   3. Supplement postulate✓
   4. Definition of supplementary angles✓
   5. Definition of linear pair✓
   6. Supplement postulate✓
   7. Definition of supplementary angles✓
   8. Transitive property✓
   9. Subtraction property✓
   10. Definition of congruent angles✓

B. Indirect proof

1. Assume: If $x = 2$, then $3x - 5 = 10$.✓

$3x - 5 + 5 = 10 + 5$ ✓

$3x = 15$✓

$\frac{3x}{3} = \frac{15}{3}$ ✓

$x = 5 \rightarrow$ Contradiction ✓

Therefore, the original statement is true.✓

2. Assume: If $x = 3$, then $4x - 4 = 12$.✓

$4x - 4 + 4 = 12 + 4$ ✓

$4x = 16$ ✓

$\frac{4x}{4} = \frac{16}{4}$ ✓

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