

**Opti 503A****Solutions**

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**Problem 12-7)** Let  $C \times D = E$ . Then, from Problem 13,  $(A \times B) \cdot E = A \cdot (B \times E)$ . Using Problem 15, we will have  $B \times E = B \times (C \times D) = (B \cdot D)C - (B \cdot C)D$ . Therefore,

$$(A \times B) \cdot (C \times D) = A \cdot [(B \cdot D)C - (B \cdot C)D] = (A \cdot C)(B \cdot D) - (A \cdot D)(B \cdot C).$$

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