

Answer on Question #56111 – Math – Vector Calculus

4 Evaluate $(A+B) \cdot (A-B)$ if $A=2i-3j+5k$ and $B=3i+j-2k$

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Solution

$$(A+B) \cdot (A-B) = (2i-3j+5k+3i+j-2k) \cdot (2i-3j+5k-3i-j+2k) = (5i-2j+3k) \cdot (-i-4j+7k) = 5 \cdot (-1) \cdot i \cdot i + (-2) \cdot (-4) \cdot j \cdot j + 3 \cdot 7 \cdot k \cdot k = 5 \cdot (-1) + (-2) \cdot (-4) + 3 \cdot 7 = -5 + 8 + 21 = 24.$$

Answer: 24.