

Answers to 10C Midterm 2, May 18, 2005

1. The dot product of the vectors is zero for $t = -2, -4$.

2(a). $L(x, y) = 4 - 3(x - 1) + 5(y - 2)$

2(b). $g(1.02, 2.03) \approx 4 - 3(.02) + 5(.03)$

3. $-3\vec{i} + 12\vec{k}$ (the cross product of the given vectors)

4(a). $-64\vec{i} + 80\vec{j}$ (the gradient vector at $(-1, 2)$)

4(b). $64\vec{i} - 80\vec{j}$ ($-$ the gradient vector at $(-1, 2)$)

4(c). Any vector which is perpendicular to the gradient vector at $(-1, 2)$, for example $5/4\vec{i} + \vec{j}$.