MATH 241H - Quiz 11 - due April 23, 2007 **Name:**

1. Evaluate $\int_C (3x - 2y + z)ds$ where C is the curve parametrized by $\mathbf{r}(t) = \cos t\ \mathbf{i} + \sin t\ \mathbf{j} + 3t\ \mathbf{k}, 0 \leq t \leq \pi/2$.

2. Evaluate $\int_C y\ dx + z\ dy + x\ dz$ where C is the curve parametrized by $\mathbf{r}(t) = (2t + 1)\ \mathbf{i} + (1 - t)\ \mathbf{j} + 3t\ \mathbf{k}, 0 \leq t \leq 1$.

3. Evaluate $\int_C (x + \cos y)\ dx - x \sin y\ dy$ where C is the curve parametrized by $\mathbf{r}(t) = t\ \mathbf{i} + \pi\sqrt{t}\ \mathbf{j}, 1 \leq t \leq 4$. (Hint: this vector field is conservative)