Name: July 30, 2015 MAC 2313.8326 Cyr

Quiz 11 You must show all work to receive full credit!!

**Problem 1.** (3 pts) Let  $\mathbf{F} = \langle 2xy + 5, x^2 - 4z, -4y \rangle$ . Given that  $\mathbf{F}$  is conservative, evaluate  $\int_{\mathcal{C}} \mathbf{F} d\mathbf{r}$ , where  $\mathcal{C}$  is any curve from (1, 1, 0) to (4, -2, 1).

**Problem 2.** (3 pts) Calculate  $\iint_{\mathcal{S}} zds$  where  $\mathcal{S}$  is the part of the surface  $z = \frac{2}{3}x^3$  with  $0 \le x \le 2, 0 \le y \le 9$ .

**Problem 3.** (4 pts) Set up the integral  $\iint_{\mathcal{S}} \mathbf{F} \cdot d\mathbf{S}$  where  $\mathbf{F} = \langle y, z, 0 \rangle$  and  $\mathcal{S}$  has parametrization  $\mathbf{r}(u, v) = \langle u^3 - v, u + v, v^2 \rangle$  for  $0 \le u \le 2, 0 \le v \le 3$  with downward-pointing normal. (Do NOT evaluate.)