

- (a) $\int_C \mathbf{F} \cdot d\mathbf{r} = \int_{-1}^1 \langle 5t, t^2, 6t \rangle \cdot \langle 5, 6, -2t \rangle dt = \int_{-1}^1 (25t + 6t^2 - 12t^2) dt$
 $= \left[\frac{25}{2}t^2 - 2t^3 \right]_{-1}^1 = -4$
- (b) Now $\mathbf{F}(\mathbf{r}(t)) = \langle 5t, t^2, 6t \rangle$, so $\mathbf{F}(\mathbf{r}(-1)) = \langle -5, 1, -6 \rangle$,
 $\mathbf{F}(\mathbf{r}(-\frac{1}{2})) = \langle -\frac{5}{2}, \frac{1}{4}, -3 \rangle$, $\mathbf{F}(\mathbf{r}(\frac{1}{2})) = \langle \frac{5}{2}, \frac{1}{4}, 3 \rangle$,
and $\mathbf{F}(\mathbf{r}(1)) = \langle 5, 1, 6 \rangle$.

