11/9/20 Quiz for Lecture 18

1) $\int_C xy\,ds$

$(0,1)$ to $(2,3)$

$(0,1) + \langle 2,2\rangle \quad x = 2t, \quad y = 1 + 2t.$

$r'(t) = \sqrt{2^2+2^2} = \sqrt{8}$

$ds = \sqrt{8}\,dt$

$$\int_0^1 (2t)(2t+1)\sqrt{8}\,dt = \sqrt{8}\int_0^1 4t^2+2t\,dt$$

$$= \left(\frac{4t^3}{3} + t^2\right)\Big|_0^1 \cdot \sqrt{8} = \frac{4\sqrt{2}}{3}$$

2) $\int_C xy^2\,dx + x^2y\,dy$

$x = t^2 \qquad y = t^3$

$dx = 2t \qquad dy = 3t^2$

$$\int_0^1 (t^2)(t^6)\,2t\,dt + t^4 \cdot t^3 \cdot 3t^2\,dt$$

$$\int 2t^9 + 3t^9\,dt$$

$$= \frac{t^{10}}{2}\Big|_0^1$$

$$= \frac{1}{2}$$