

Math 206 Section A  
List of formulas on exam

$$1. \int_C u \, dL = \int_a^b u(f(t)) \|f'(t)\| \, dt$$

$$2. \int_C \vec{F} \cdot d\vec{x} = \int_a^b \vec{F}(f(t)) \cdot f'(t) \, dt$$

$$3. \int \int_M g \, d\sigma = \int \int_R g(f(s, t)) \|f_s(s, t) \times f_t(s, t)\| \, ds \, dt$$

$$4. \int \int_M \vec{F} \cdot \vec{n} \, d\sigma = \int \int_R \vec{F}(f(s, t)) \cdot (f_s(s, t) \times f_t(s, t)) \, ds \, dt$$

$$5. \int_{\partial R} \vec{F} \cdot d\vec{x} = \int \int_R \left( \frac{\partial F_2}{\partial x} - \frac{\partial F_1}{\partial y} \right) \, dA$$

$$6. \int \int_{\partial S} \vec{F} \cdot \vec{n} \, d\sigma = \int \int \int_S \operatorname{div} \vec{F} \, dV$$

$$7. \int_{\partial M} \vec{F} \cdot d\vec{x} = \int \int_M \operatorname{curl} \vec{F} \cdot \vec{n} \, d\sigma$$

$$8. \, x = r \cos \theta, \, y = r \sin \theta, \, z = w$$

$$9. \, x = \rho \sin \phi \cos \theta, \, y = \rho \sin \phi \sin \theta, \, z = \rho \cos \phi$$