Review Problems:
For each integral state which theorems (Stokes, Divergence, Greens, Fund. Thm of Line Integrals, etc.) can be applied.

Problem 1: $\iint (x, -z, y) \cdot \mathbf{dS}$ where S is the hemisphere $x^2 + y^2 + z^2 = 25$, $y \geq 0$.

Problem 2: $\int_C (yz, 2xz, e^{xy}) \cdot d\mathbf{r}$ Where C is the curve $(4\cos t, 4\sin t, 5)$ for $0 \leq t \leq \pi$

Problem 3: $\iint_S F \cdot \mathbf{dS}$ where $F(x, y, z) = (x^2, -y, z)$ and S is the surface of the region $y^2 + z^2 \leq 9$, $0 \leq x \leq 2$

Problem 4: $\iint_S xz dS$ where S is the boundary of the region enclosed by the cylinder $y^2 + z^2 = 9$, and the planes $x = 0$ and $x + y = 5$

Problem 5: $\iint_S (\nabla \times F) \cdot \mathbf{dS}$ where $F(x, y, z) = (2y\tan(z), \cos(z), xe^y)$ and S is the hemisphere $x^2 + y^2 + z^2 = 9$, $z \geq 0$, oriented upward.

Problem 6: $\int_C (yz, 2xz, e^{xy}) \cdot d\mathbf{r}$ Where C is the curve $(4\cos t, 4\sin t, 5)$ for $0 \leq t \leq 2\pi$

Problem 7: $\iint_S (2x + 2y + z^2) dS$ where S is the sphere of radius 1 centered at the origin.

Problem 8: $\iint_S (\nabla \times F) \cdot \mathbf{dS}$ where $F(x, y, z) = (x^3, z\sin y, zxe^y)$ and S is the ellipsoid $16x^2 + 9y^2 + z^2 = 9$.