No aids are permitted, except an approved calculator. **Show all your work.** Correct answers with little or no supporting work will not be given credit. Write legibly.

1. (5 pts) Solve the equation $y' = (3x^2 - 1)/(3 + 2y)$.

$$\frac{dy}{dx} = \frac{3x^2 - 1}{3 + 2y}$$

$$(3 + 2y)\,dy = (3x^2 - 1)\,dx$$

$$\boxed{\begin{array}{c} 3y + y^2 = x^3 - x + C \\ or \\ 3y + y^2 - x^3 + x = C \end{array}}$$

2. (5 pts) Solve the initial value problem $\sin 2x\,dx + \cos 3y\,dy = 0$ $y(\pi/2) = \pi/3$.

$$\sin 2x\,dx = -\cos 3y\,dy$$

$$-\frac{1}{2}\cos 2x = -\frac{1}{3}\sin 3y + C$$

Let $x = \frac{\pi}{2}$, $y = \frac{\pi}{3}$

$$-\frac{1}{2}\cos \pi = -\frac{1}{3}\sin \pi + C$$

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

$$\boxed{-\frac{1}{2}\cos 2x = -\frac{1}{3}\sin 3y + \frac{1}{2}}$$