1. $\int_0^x (5x+3y)\,dx$

$= \left[\frac{5}{2}x^2 + 3xy\right]_0^x$

$= \underbrace{\frac{5}{2}(x)^2 + 3(x)y}_{\text{"x"}} - \left(\frac{5}{2}(0)^2 + 3(0)y\right)$

$= \boxed{\frac{5}{2}x^2 + 3xy}$

2. $\int_0^{\sqrt{x-1}} (7xy)\,dy$

$= \left[7x \cdot \frac{1}{2}y^2\right]_0^{\sqrt{x-1}}$

$= \left[\frac{7}{2}x\,y^2\right]_0^{\sqrt{x-1}}$

$= \frac{7}{2}x(\sqrt{x-1})^2 - \frac{7}{2}x(0)^2$

$= \frac{7}{2}x(x-1)$

$= \boxed{\frac{7}{2}x^2 - \frac{7}{2}x}$

3. $\int_0^{3x} (e^{x^2 y})\,dy$

$u = x^2 y \quad du = x^2\,dy$

$= \frac{1}{x^2}\int_0^{3x} (x^2 e^{x^2 y})\,dy$

$= \frac{1}{x^2}\int_{y=0}^{y=3x} e^u\,du$

$= \frac{1}{x^2}\left[e^u\right]_{y=0}^{y=3x}$

$= \frac{1}{x^2}\left[e^{x^2 y}\right]_{y=0}^{y=3x}$

$= \frac{1}{x^2}\left[e^{x^2(3x)} - e^{x^2(0)}\right]$

$= \frac{1}{x^2}\left[e^{3x^3} - e^0\right]$

$= \boxed{\frac{1}{x^2}\left(e^{3x^3} - 1\right)}$