a) $\int_0^1 \sqrt{1+x}\, dx$

$A = \frac{2}{3}(1+x)\sqrt{1+x}\Big|_0^1 \to A = \left(\frac{2(1+1)\sqrt{1+1}}{3}\right) - \left(\frac{2(1+0)\sqrt{1+0}}{3}\right)$

$A = \frac{4\sqrt{2}}{3} - \frac{2}{3} \to \boxed{A = \frac{4\sqrt{2}-2}{3}}$

b) $\int_{-3}^0 (x^2 - 4x + 7)\, dx$

$A = \frac{x^3}{3} - 2x^2 + 7x\Big|_{-3}^0 \to A = 0 - \left(\frac{(-3)^3}{3} - 2(-3)^2 + 7(-3)\right)$

$A = -\left(\frac{-27}{3} - 18 - 21\right) \to A = 9 + 18 + 21 \to \boxed{A = 48}$

c) $\int_1^3 \frac{1}{x^2}\, dx$

$A = -\frac{1}{x}\Big|_1^3 \to A = \left(-\frac{1}{3}\right) - \left(\frac{1}{1}\right) \to A = -\frac{1}{3} + 1 \to \boxed{A = \frac{2}{3}}$

d) $\int_0^1 (x^2 + \sqrt{x})\, dx$

$A = \frac{x^3}{3} + \frac{2x\sqrt{x}}{3} \Rightarrow A = \frac{1^3}{3} + \frac{2 \cdot 1 \sqrt{1}}{3} - 0 \to A = \frac{1}{3} + \frac{2}{3} \to \boxed{A = 1}$

e) $\int_0^1 x e^{x^2}\, dx$

$A = \frac{e^{x^2}}{2}\Big|_0^1 \to A = \frac{e^{1^2}}{2} - \frac{e^{0^2}}{2} \to \frac{e^2}{2} - \frac{1}{2} \to \boxed{A = \frac{e^2-1}{2}}$

f) $\int_{-1}^1 \frac{x\, dx}{(x^2+1)^2} \to A = \frac{\frac{x^2}{2}}{x^2+1}$

$A = \left(\frac{\frac{1^2}{2}}{1^2+1}\right) - \left(\frac{\frac{(-1)^2}{2}}{(-1)^2+1}\right) \to A = \left(\frac{\frac{1}{2}}{2}\right) - \left(\frac{\frac{1}{2}}{2}\right) \to A = 1 - 1 \to \boxed{A = 0}$