

$$55. \int_{-1}^1 \underline{x(x^2+1)^3} \underline{dx}$$

$$u = x^2 + 1 \quad u_i = (-1)^2 + 1 = 2$$

$$\frac{du}{2} = \underline{2x dx} \quad u_f = (1)^2 + 1 = 2$$

$$\int_2^2 \frac{u^3 du}{2} = 0$$

$$61. \int_1^2 (x-1) \sqrt{2-x} \, dx$$

$$u = 2 - x \quad u + x = 2$$

$$x = 2 - u$$

$$-du = +dx$$

$$x-1 = 1-u$$

$$u_i = 2-1=1 \quad u_f = 2-2=0$$

$$\int_1^0 (1-u) u^{1/2} (-du)$$

$$\int_1^0 -u^{1/2} + u^{3/2} du$$

$$\left[-\frac{2}{3} u^{3/2} + \frac{2}{5} u^{5/2} \right]_1^0$$

$$0 - \left[-\frac{2}{3} + \frac{2}{5} \right] = \frac{4}{15}$$

$$57. \int_0^4 \frac{1}{\sqrt{2x+1}} dx$$

$$u = 2x + 1 \quad u_i = 1 \quad u_f = 9$$

$$\frac{du}{2} = dx$$

$$\int_1^9 \frac{1}{2} u^{-1/2} du$$

$$u^{1/2} \Big|_1^9 = \sqrt{9} - \sqrt{1} = 3 - 1 = 2$$

$$59. \int \frac{1}{\sqrt{x} (1 + \sqrt{x})^2} dx$$

$$u = 1 + \sqrt{x}$$

$$du = \frac{1}{2} x^{-1/2} = \frac{1}{2\sqrt{x}}$$

$$2 du = \frac{1}{\sqrt{x}}$$