

$$46. \quad x^2 \Big|_0^1 = 1^2 - 0^2 = \boxed{1}$$

$$47. \quad 3v \Big|_2^7 = 3(7) - 3(2) = 21 - 6 = \boxed{15}$$

$$48. \quad \frac{1}{2}x^2 - 2x \Big|_{-1}^0 = (0) - \left(\frac{1}{2}(-1)^2 - 2(-1)\right) \\ = 0 - \left(\frac{1}{2} + 2\right) = -2\frac{1}{2} = \boxed{-5/2}$$

$$49. \quad \frac{-3v^2}{2} + 4v \Big|_2^5 = \left[\frac{-3(5)^2}{2} + 4(5)\right] - \left[\frac{-3(2)^2}{2} + 4(2)\right] \\ = \left(-\frac{75}{2} + 20\right) - \left(-\frac{12}{2} + 8\right) \\ = -\frac{75}{2} + \frac{40}{2} + \frac{12}{2} - \frac{16}{2} = \boxed{-\frac{39}{2}}$$

$$50. \quad \frac{1}{3}t^3 - 2t \Big|_{-1}^1 = \left(\frac{1}{3}(1)^3 - 2(1)\right) - \left(\frac{1}{3}(-1)^3 - 2(-1)\right) \\ = \left(\frac{1}{3} - 2\right) - \left(-\frac{1}{3} + 2\right) = \frac{2}{3} - \frac{12}{3} = \boxed{-\frac{10}{3}}$$

$$51. \quad x^3 + \frac{1}{2}x^2 - 2x \Big|_0^3 = \left(27 + \frac{9}{2} - 6\right) - (0) = \frac{54}{2} + \frac{9}{2} - \frac{12}{2} = \boxed{\frac{51}{2}}$$

$$52. \quad \text{Rewrite: } \int_0^1 (2t-1)(2t-1) dt = \int_0^1 4t^2 - 4t + 1 dt = \left[\frac{4t^3}{3} - \frac{4t^2}{2} + t\right]_0^1 \\ = \left(\frac{4}{3} - 2 + 1\right) - (0) = \frac{4}{3} - \frac{6}{3} + \frac{3}{3} = \boxed{\frac{1}{3}}$$

$$53. \left[ \frac{t^4}{4} - \frac{9t^2}{2} \right]_{-1}^1 = \left( \frac{1}{4} - \frac{9}{2} \right) - \left( \frac{1}{4} - \frac{9}{2} \right) = \boxed{0}$$

$$54. \text{ Rewrite: } \int_1^2 (3x^{-2} - 1) dx = \left[ \frac{3x^{-1}}{-1} - x \right]_1^2 = \left[ -\frac{3}{x} - x \right]_1^2$$

$$= \left( -\frac{3}{2} - 2 \right) - \left( -3 - 1 \right) = -\frac{7}{2} + \frac{8}{2} = \boxed{\frac{1}{2}}$$

$$55. \text{ Rewrite: } \int_{-2}^1 (u - u^{-2}) du = \left[ \frac{1}{2}u^2 - \frac{u^{-1}}{-1} \right]_{-2}^1 = \left[ \frac{1}{2}u^2 + \frac{1}{u} \right]_{-2}^1$$

$$= \left( \frac{1}{2} - 1 \right) - \left( 2 - \frac{1}{2} \right) = \left( -\frac{1}{2} \right) - \left( \frac{3}{2} \right) = -\frac{4}{2} = \boxed{-2}$$

56. Rewrite:

$$\int_{-2}^1 u - u^{-2} du = \left[ \frac{1}{2}u^2 + \frac{1}{u} \right]_{-2}^1$$

$$= \left( \frac{1}{2}(-1)^2 + \frac{1}{(-1)} \right) - \left( \frac{1}{2}(-2)^2 + \frac{1}{-2} \right)$$

$$= \frac{1}{2} - 1 - 2 + \frac{1}{2} = -3 + 1 = -2$$

$$56. \text{ Rewrite: } \int_1^4 u^{1/2} - 2u^{-1/2} du = \left[ \frac{2}{3}u^{3/2} - 4u^{1/2} \right]_1^4$$

$$= \left( \frac{2}{3}(4)^{3/2} - 8 \right) - \left( \frac{2}{3} - 4 \right) = \frac{2 \cdot 8}{3} - 8 - \frac{2}{3} + 4$$

$$= \frac{16}{3} - 4 - \frac{2}{3} = \frac{16}{3} - \frac{12}{3} - \frac{2}{3} = \frac{2}{3} = \boxed{\frac{2}{3}}$$

$$57. \left[ \frac{3}{4} v^{4/3} \right]_{-3}^3 = \frac{3}{4}(3)^{4/3} - \frac{3}{4}(-3)^{4/3} = \boxed{0}$$

58. Rewrite:  $\int_{-1}^1 t^{1/3} - 2 dt = \left[ \frac{3}{4} t^{4/3} - 2t \right]_{-1}^1$

$$= \left( \frac{3}{4} - 2 \right) - \left( \frac{3}{4} + 2 \right) = -2 - 2 = \boxed{-4}$$

59. Rewrite:  $\int_1^8 \frac{\sqrt{2}}{\sqrt{x}} dx = \sqrt{2} \int_1^8 x^{-1/2} dx = 2\sqrt{2} x^{1/2} \Big|_1^8$

$$= 2\sqrt{2}(8)^{1/2} - 2\sqrt{2} \cdot 1 = 2\sqrt{2}\sqrt{8} - 2\sqrt{2}$$

$$= 2\sqrt{2}(2\sqrt{2} - 1) = 4 \cdot 2 - 2\sqrt{2} = 8 - 2\sqrt{2}$$

60. Rewrite:  $\int_0^1 \frac{x}{3} - \frac{x^{1/2}}{3} dx = \frac{1}{3} \int_0^1 x - x^{1/2} dx = \frac{1}{3} \left( \frac{1}{2} x^2 - \frac{2}{3} x^{3/2} \right) \Big|_0^1$

$$= \frac{1}{3} \left( \frac{1}{2} - \frac{2}{3} \right) - \frac{1}{3} (0 - 0) = \frac{1}{3} \left( \frac{-1}{6} \right) = \boxed{-\frac{1}{18}}$$

61. Rewrite:  $\int_0^2 (2\sqrt{t} - t\sqrt{t}) dt = \int_0^2 2t^{1/2} - t^{3/2} dt$

$$= \left[ \frac{2}{3} \cdot 2 t^{3/2} - \frac{2}{5} t^{5/2} \right]_0^2 = \left[ \frac{4}{3} t^{3/2} - \frac{2}{5} t^{5/2} \right]_0^2$$

$$= \left( \frac{4}{3} (2)^{3/2} - \frac{2}{5} (2)^{5/2} \right) - (0) = \frac{4}{3} \cdot 2\sqrt{2} - \frac{2}{5} \cdot 4\sqrt{2}$$

$$= \frac{8}{3} \sqrt{2} - \frac{8}{5} \sqrt{2} = \frac{40}{15} \sqrt{2} - \frac{24}{15} \sqrt{2} = \boxed{\frac{16}{15} \sqrt{2}}$$