

$$\textcircled{5} \int_{-1}^5 |x-2| dx$$

$$\begin{aligned} x-2=0 \\ \textcircled{x=2} \quad - \int_{-1}^2 x-2 dx + \int_2^5 x-2 dx &= - \left[\frac{x^2}{2} - 2x \right]_{-1}^2 + \left[\frac{x^2}{2} - 2x \right]_2^5 \\ - \left[\frac{4}{2} - 4 \right] - \left(\frac{1}{2} + 2 \right) &+ \left[\left(\frac{25}{2} - 10 \right) - (2 - 4) \right] = - \left(-2 - \frac{5}{2} \right) + \left(\frac{5}{2} + 2 \right) = \textcircled{9} \end{aligned}$$

$$\textcircled{6} \frac{dy}{dx} \int_{-2}^{3x} (t^3 + 2t) dt$$

$$\left[(3x)^3 + 2(3x) \right] (3) = 3(27x^3 + 6x) = \boxed{9x(9x^2 + 2)}$$

$$\textcircled{7} \text{Average } f(x) = 8x - 3 \quad [2, 5]$$

$$\begin{aligned} \frac{1}{5-2} \int_2^5 8x-3 dx &= \frac{1}{3} \left[4x^2 - 3x \right]_2^5 = \frac{1}{3} \left[\underset{85}{(100-15)} - \underset{10}{(16-6)} \right] = \frac{75}{3} \\ &= \textcircled{25} \end{aligned}$$