More problems on definite integral

We have computed the values of some definite integrals:

$$\int_0^1 x \, dx = \frac{1}{2} \qquad \text{and} \qquad \int_0^1 x^2 \, dx = \frac{1}{3}.$$

By similar methods, we could also compute

$$\int_1^3 x \, dx = 4, \qquad \int_{-2}^0 x \, dx = -2, \qquad \text{and} \qquad \int_{-2}^0 x^2 \, dx = \frac{8}{3}.$$

For each of the following, use these results and properties of definite integral to find the value of the given definite integral.

1. $\displaystyle\int_0^3 x \, dx$

2. $\displaystyle\int_{-2}^1 x \, dx$

3. $\displaystyle\int_{-2}^1 x^2 \, dx$

4. $\displaystyle\int_0^1 5x \, dx$

5. $\displaystyle\int_0^1 (x + x^2) \, dx$

6. $\displaystyle\int_0^1 (4x - x^2) \, dx$

7. $\displaystyle\int_1^{-2} x \, dx$

8. $\displaystyle\int_{-2}^1 (3x^2 - x) \, dx$