Find the average value of each function over the specified interval. Graph the function to verify that your answer is plausible.

1. $f(x) = \cos\left(\dfrac{x}{2}\right) + \dfrac{x}{3}$ on $[0, 10]$

2. $f(x) = x\,e^{x^2} - x^3 + x^2 - x$ on $[-1, 1]$

3. $f(x) = \sec(x)^2 \tan(x)$ on $[2, 4]$

4. $f(x) = \sin(x^2)$ on $[0, 3]$

Let $f(x) = \dfrac{1}{\sqrt{2\pi}} e^{-\frac{x^2}{2}}$

Use WolframAlpha to approximate the definite integrals:

5. $\displaystyle\int_{-1}^{1} f(x)\, dx$

6. $\displaystyle\int_{-2}^{2} f(x)\, dx$

7. $\displaystyle\int_{-3}^{3} f(x)\, dx$

8. $\displaystyle\int_{-20}^{20} f(x)\, dx$