

### 201-203-RE- Practice Set #11: Approximate Integration

Approximate the following integrals using the Trapezoidal Rule (TR) and the Right-End Point method (RE) with the given  $n$ . Round your answers to 4 decimals.

$$(1) \int_1^4 \frac{2}{4x^2 + 9} dx \quad \text{TR: } n = 3, \text{ RE: } n = 6$$

$$(10) \int_0^{12} \frac{5}{\ln(x+2)} dx \quad \text{TR: } n = 4, \text{ RE: } n = 6$$

$$(2) \int_1^3 (\ln(x) + 3)^2 dx \quad \text{TR: } n = 4, \text{ RE: } n = 4$$

$$(11) \int_0^8 \cos(x^2 + x) dx \quad \text{TR: } n = 4, \text{ RE: } n = 4$$

$$(3) \int_2^4 \frac{6}{\sqrt{1 + \ln(x)}} dx \quad \text{TR: } n = 4, \text{ RE: } n = 4$$

$$(12) \int_1^{13} \frac{x^2 + 1}{x^3 + 1} dx \quad \text{TR: } n = 6, \text{ RE: } n = 4$$

$$(4) \int_{-2}^2 (x^3 + 6)^{2/3} dx \quad \text{TR: } n = 4, \text{ RE: } n = 4$$

$$(13) \int_0^4 e^{\cos(3x)} dx \quad \text{TR: } n = 4, \text{ RE: } n = 4$$

$$(5) \int_2^6 \frac{10}{\sqrt{x^2 + 4}} dx \quad \text{TR: } n = 8, \text{ RE: } n = 4$$

$$(14) \int_0^6 \sin\left(\frac{x^3}{3}\right) dx \quad \text{TR: } n = 3, \text{ RE: } n = 6$$

$$(6) \int_1^9 \sqrt[5]{x^2 + 3x} dx \quad \text{TR: } n = 4, \text{ RE: } n = 8$$

$$(15) \int_0^1 \sqrt{\cos(x)} dx \quad \text{TR: } n = 5, \text{ RE: } n = 4$$

$$(7) \int_4^{10} \sqrt[3]{x^2 + 5} dx \quad \text{TR: } n = 6, \text{ RE: } n = 6$$

$$(16) \int_1^5 \cos(e^{1-x}) dx \quad \text{TR: } n = 4, \text{ RE: } n = 4$$

$$(8) \int_2^7 \frac{e^{3-x}}{\ln(x)} dx \quad \text{TR: } n = 5, \text{ RE: } n = 4$$

$$(17) \int_0^4 e^{\sin(x)} dx \quad \text{TR: } n = 4, \text{ RE: } n = 4$$

$$(9) \int_0^3 \sqrt{x^2 + 2x} dx \quad \text{TR: } n = 3, \text{ RE: } n = 6$$

$$(18) \int_{-1}^2 \sqrt{1 + e^x} dx \quad \text{TR: } n = 3, \text{ RE: } n = 6$$

#### ANSWERS:

$$(1) \text{ TR: } 0.2151; \text{ RE: } 0.1781$$

$$(7) \text{ TR: } 22.5891; \text{ RE: } 23.5685$$

$$(13) \text{ TR: } 5.9076; \text{ RE: } 5.7111$$

$$(2) \text{ TR: } 26.7366; \text{ RE: } 28.6862$$

$$(8) \text{ TR: } 3.2530; \text{ RE: } 1.0688$$

$$(14) \text{ TR: } 2.3911; \text{ RE: } 1.3266$$

$$(3) \text{ TR: } 8.3606; \text{ RE: } 8.1789$$

$$(9) \text{ TR: } 6.4970; \text{ RE: } 7.5984$$

$$(15) \text{ TR: } 0.9121; \text{ RE: } 0.8779$$

$$(4) \text{ TR: } 13.5833; \text{ RE: } 15.6940$$

$$(10) \text{ TR: } 36.4511; \text{ RE: } 29.7600$$

$$(16) \text{ TR: } 3.6928; \text{ RE: } 3.9225$$

$$(5) \text{ TR: } 9.3842; \text{ RE: } 8.4477$$

$$(11) \text{ TR: } 1.9693; \text{ RE: } 0.0020$$

$$(17) \text{ TR: } 6.6885; \text{ RE: } 6.4231$$

$$(6) \text{ TR: } 16.2960; \text{ RE: } 16.9650$$

$$(12) \text{ TR: } 2.9029; \text{ RE: } 1.7554$$

$$(18) \text{ TR: } 5.3755; \text{ RE: } 5.7376$$