

Multiple-Choice Test – Chapter 7 Background
Autar Kaw

1. Physically, integrating $\int_a^b f(x)dx$ means finding the
- (A) area under the curve from a to b
 - (B) area to the left of point a
 - (C) area to the right of point b
 - (D) area above the curve from a to b
2. The mean value of a function $f(x)$ from a to b is given by
- (A) $\frac{f(a) + f(b)}{2}$
 - (B) $\frac{f(a) + 2f\left(\frac{a+b}{2}\right) + f(b)}{4}$
 - (C) $\int_a^b f(x)dx$
 - (D) $\frac{\int_a^b f(x)dx}{b-a}$
3. The exact value of $\int_{0.2}^{2.2} xe^x dx$ is most nearly
- (A) 7.8036
 - (B) 11.807
 - (C) 14.034
 - (D) 19.611
4. $\int_{0.2}^2 f(x)dx$ for
- $$f(x) = x, \quad 0 \leq x \leq 1.2$$
- $$= x^2, \quad 1.2 < x \leq 2.4$$
- is most nearly

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- (A) 1.9800
- (B) 2.6640
- (C) 2.7907
- (D) 4.7520

5. The area of a circle of radius a can be found by the following integral

- (A) $\int_0^a (a^2 - x^2) dx$
- (B) $\int_0^{2\pi} \sqrt{a^2 - x^2} dx$
- (C) $4 \int_0^a \sqrt{a^2 - x^2} dx$
- (D) $\int_0^a \sqrt{a^2 - x^2} dx$

6. Velocity distribution of a fluid flow through a pipe varies along the radius and is given by $v(r)$. The flow rate through the pipe of radius a is given by

- (A) $\pi v(a) a^2$
- (B) $\pi \frac{v(0) + v(a)}{2} a^2$
- (C) $\int_0^a v(r) dr$
- (D) $2\pi \int_0^a v(r) r dr$

