

66. A company agrees to accept the highest of four sealed bids on a property. The four bids are regarded as four independent random variables with common cumulative distribution function

$$F(x) = \frac{1}{2}(1 + \sin \pi x) \quad \text{for } \frac{3}{2} \leq x \leq \frac{5}{2}.$$

Which of the following represents the expected value of the accepted bid?

- (A) $\pi \int_{3/2}^{5/2} x \cos \pi x \, dx$
- (B) $\frac{1}{16} \int_{3/2}^{5/2} (1 + \sin \pi x)^4 \, dx$
- (C) $\frac{1}{16} \int_{3/2}^{5/2} x(1 + \sin \pi x)^4 \, dx$
- (D) $\frac{1}{4} \pi \int_{3/2}^{5/2} \cos \pi x (1 + \sin \pi x)^3 \, dx$
- (E) $\frac{1}{4} \pi \int_{3/2}^{5/2} x \cos \pi x (1 + \sin \pi x)^3 \, dx$