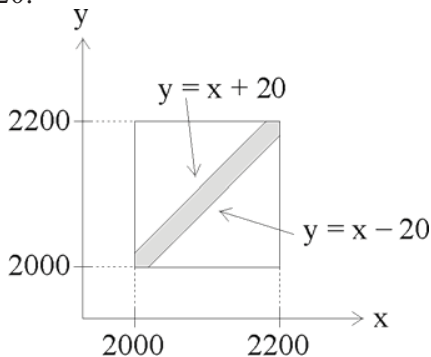


92.

Solution: B

Let X and Y denote the two bids. Then the graph below illustrates the region over which X and Y differ by less than 20:



Based on the graph and the uniform distribution:

$$\begin{aligned}\Pr[|X - Y| < 20] &= \frac{\text{Shaded Region Area}}{(2200 - 2000)^2} = \frac{200^2 - 2 \cdot \frac{1}{2}(180)^2}{200^2} \\ &= 1 - \frac{180^2}{200^2} = 1 - (0.9)^2 = 0.19\end{aligned}$$

More formally (still using symmetry)

$$\begin{aligned}\Pr[|X - Y| < 20] &= 1 - \Pr[|X - Y| \geq 20] = 1 - 2\Pr[X - Y \geq 20] \\ &= 1 - 2 \int_{2020}^{2200} \int_{2000}^{x-20} \frac{1}{200^2} dy dx = 1 - 2 \int_{2020}^{2200} \frac{1}{200^2} y \Big|_{2000}^{x-20} dx \\ &= 1 - \frac{2}{200^2} \int_{2020}^{2200} (x - 20 - 2000) dx = 1 - \frac{1}{200^2} (x - 2020)^2 \Big|_{2020}^{2200} \\ &= 1 - \left(\frac{180}{200}\right)^2 = 0.19\end{aligned}$$