Choose the answer that gives the area of the region whose boundaries are given.

1. The parabola $y = x^2 - 3$ and the line $y = 1$

   (A) $\frac{8}{3}$

   (B) 32

   (C) $\frac{32}{3}$

   (D) $\frac{16}{3}$

   (E) none of these

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2. The parabola $y^2 = x$ and the line $x + y = 2$

   (A) $\frac{5}{2}$

   (B) $\frac{3}{2}$

   (C) $\frac{11}{6}$

   (D) $\frac{9}{2}$

   (E) $\frac{29}{6}$

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3. The curve of $y = \frac{2}{x}$ and $x + y = 3$

   (A) $\frac{1}{2} - 2\ln 2$

   (B) $\frac{3}{2}$

   (C) $\frac{1}{2} - \ln 4$

   (D) $\frac{5}{2}$

   (E) $\frac{3}{2} - \ln 4$

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4. In the 1st quadrant, bounded below by the x-axis and above by the curves of $y = \sin x$ and $y = \cos x$.

   (A) $2 - \sqrt{2}$

   (B) $2 - \sqrt{2}$

   (C) 2

   (D) $\sqrt{2}$

   (E) $2\sqrt{2}$

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5. The area bounded by $y = e^x$, $y = 1$, $y = 2$, and $x = 3$ is equal to

   (A) $3 + \ln 2$

   (B) $3 - 3\ln 3$

   (C) $4 + \ln 2$

   (D) $3 - \frac{1}{2}\ln^2 2$

   (E) $4 - \ln 4$