10. Find $y(2)$ if y satisfies the initial-value problem $xy' = x^3 - 2y$ and $y(1) = 1$.

(a) $\dfrac{9}{5}$ (b) $\dfrac{5}{6}$ (c) 2 (d) $\dfrac{4}{5}$ (e) -1 (f) $\dfrac{1}{6}$

11. A tank initially contains 100 gallons of brine with 60 lbs of dissolved salt. Brine that contains 3 lbs of salt per gallon enters the tank at the rate of 3 gallons per minute and the well-stirred mixture leaves at the rate of 3 gallons per minute. Let $y(t)$ be the amount of salt in the tank at time t. What is $y(100\ln 2)$?

(a) 30   (b) 80   (c) 260   (d) 270   (e) 300   (f) 320

11. Let $y(x)$ be the solution to the initial-value problem $x\dfrac{dy}{dx} - 2y = x^3$ and $y(1) = 0$. What is $y(3)$?

(A) 1   (B) 3   (C) 6   (D) 9   (E) 12   (F) 15   (G) 18   (H) 27