

Question 16: B

Question 17: E

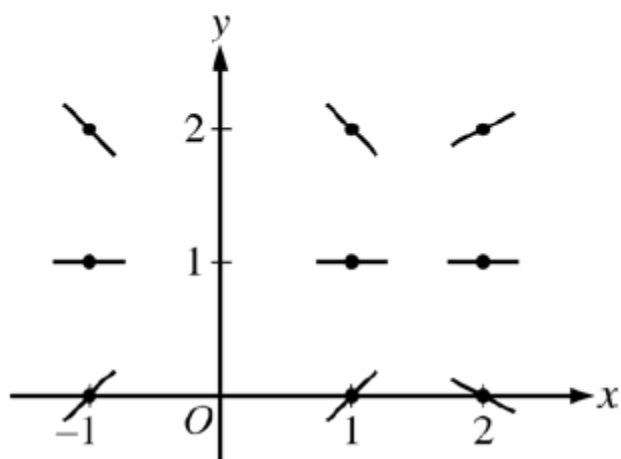
Question 18: B

Question 19: B

Question 20: B

(a)  $\left. \frac{dy}{dx} \right|_{(x,y)=(1,2)} = \left(1 - \frac{2}{1}\right)(2 - 1) = -1$

(b)



$$(c) \frac{dy}{dx} = \left(1 - \frac{2}{x^2}\right)(y - 1)$$

$$\int \frac{dy}{y-1} = \int \left(1 - \frac{2}{x^2}\right) dx$$

$$\ln|y-1| = x + \frac{2}{x} + C$$

$$\ln|2-1| = 1 + \frac{2}{1} + C \Rightarrow C = -3$$

$$\ln|y-1| = x + \frac{2}{x} - 3$$

Note that  $y - 1 > 0$  since the solution curve includes the point  $(1, 2)$ .

$$\ln(y-1) = x + \frac{2}{x} - 3$$

$$y = f(x) = e^{\left(x + \frac{2}{x} - 3\right)} + 1$$

Note: This solution is valid for  $x > 0$ .