

b. (n) \perp (s) (given)

So the product of their slopes is -1

$$a(n) \times a(s) = -1$$

$$a(n) = \frac{-1}{a(s)}$$

$$a(n) = \frac{-1}{\frac{1}{4}}$$

$$a(n) = -4$$

(n) passes through R (given)

$$\text{So, } \frac{y - y_R}{x - x_R} = a(n)$$

$$\frac{y+4}{x-1} = -4$$

$$y+4 = -4x+4$$

$$(n): y = -4x$$

5) a. (D) passes through O (given)

So coordinates of O satisfy eqn of (D).

$$(D): mx + (m-2)y + m - 4 = 0$$

or, if (D) passes through origin then $m-4=0$

$$\text{Thus, } \boxed{m=4}$$

$$(m-2)y = -mx - m + 4$$

$$y = \frac{-mx}{m-2} - \frac{m}{m-2} + \frac{4}{m-2}$$

$$0 = 0 + \frac{-m+4}{m-2}$$

$$0 = \frac{-m+4}{m-2}$$

$$-m+4=0$$

$$\boxed{m=4}$$