آدرینا حسینی — تکلیف ریاضی ۲۷ — دوازدهم رشته A عدد

$\boxed{3}$

$$f(x) = \frac{a}{2x-1} \rightarrow f'(x) = \frac{(2x-1)\times 0 - 2a}{(2x-1)^2} \rightarrow f'(x) = \frac{-2a}{(2x-1)^2} \rightarrow x = -\frac{1}{2} \rightarrow \frac{-2a}{4} = -12 \quad a = 24$$

$(-0/5, -12)$

$(2/5, 6)$

$$\hookrightarrow f(x) = \frac{24}{2x-1} = \frac{24}{9} = \frac{8}{3}$$

$\boxed{4}$

$y = 2x + b$

$$y = \frac{x+a}{ax+1} \rightarrow y' = \frac{1-a^2}{(ax+1)^2} \rightarrow y' = \frac{1-a^2}{(a+1)^2} = \frac{(1-a)\cancel{(a+1)}}{(a+1)\cancel{(a+1)}} = 2$$

$$2a + 2 = 1 - a \rightarrow 3a = -1 \rightarrow a = -\frac{1}{3} \rightarrow a - b = -\frac{1}{3} + 1 = \frac{2}{3}$$

$$f(1) = \frac{1 - \frac{1}{3}}{-\frac{1}{3} + 1} = 1 \rightarrow 2(1) + b = 1 \rightarrow b = -1$$

$\boxed{8}$

$$y = x^3 + ax^2 + bx - 1 \rightarrow x = -1 \rightarrow -1 + a - b - 1 = -4 \rightarrow a - b = -2$$

$$y' = 3x^2 + 2ax + b \rightarrow x = -1 \rightarrow 3 - 2a + b = 0 \rightarrow b - 2a = -3$$

$\rightarrow b = 7$, $-a = -5$, $a = 5$

$\boxed{9}$

$f(x) = x^3 + ax^2 + bx + c$

$f(0) = 4 \rightarrow c = 4$

$f'(0) = 0 \rightarrow 3x^2 + 2ax + b \rightarrow b = 0$

$$f'(x) = 3x^2 + 2ax = x(3x + 2a) = 0 \rightarrow x = 0, \quad x = -\frac{2a}{3}$$

$$f\left(-\frac{2a}{3}\right) = 0 \rightarrow \left(-\frac{2a}{3}\right)^3 + a\left(-\frac{2a}{3}\right)^2 + 4 = 0$$

$$\frac{\cancel{4}}{27} a^3 = -\cancel{4} \rightarrow a^3 = -27 \rightarrow a = -3$$