19,5

-1 (۲)

$x^2 - ax + b \longrightarrow$ (1 | 2 ; 0 | 1 | -a | 0) $\Rightarrow 1 - a + b = 0 \Rightarrow 2 - a = 0 \Rightarrow a = 2$ ✓

$\Rightarrow \frac{b}{1} = 2 \Rightarrow b = 2$ ✓

$\Rightarrow a + b = 4$ ✓

-2 (۲)

$-1^{*} \quad 2$ (0 | + | 0 | −) $\longrightarrow (x - 2n)' \rightarrow -1 - 2n = 0 \Rightarrow 2n = -1 \Rightarrow n = -\frac{1}{2}$ ✓

$-1^{*} \quad 2$ (0 | + | 0 | −) $\Rightarrow (k-2)x + m - 1 \rightarrow 2k + m - 4 = 0$

$k - 2 < 0 \Rightarrow k < 2 \Rightarrow k = 1$ ✓

$\Rightarrow 2 + m - 4 = 0 \Rightarrow m = 2$ ✓

$\Rightarrow \frac{m}{n} + k = \frac{2}{-\frac{1}{2}} + 1 = -4 + 1 = -3$ ✓

-3 (۲)

$y = -\frac{1}{2}x^2 + 2x + 4 > \frac{7}{2} \Rightarrow -\frac{1}{2}x^2 + 2x + \frac{1}{2} > 0 \Rightarrow$ (−1 | + | 3 | −) $= (-1, 3)$

$\Rightarrow a = -1$ ✓, $b = 3$ ✓ $\Rightarrow b - a = 3 - (-1) = 4$ ✓

-4 (۲)

$f(x) = x^3 - 2x^2 - x + 2 \Rightarrow f(x) = (x-1)(x^2 - 2x - 2)$

$x > 0 \longrightarrow (x-1)(x^2 - 2x - 2) < 0 \rightarrow$ (−1 | + | 1 | − | 2 | +)

$\rightarrow (-\infty, -1) \rightarrow$ قبول

$\rightarrow (1, 2) \Rightarrow a = 1, b = 2$

$\frac{2+1}{2} = 2 \longrightarrow f_{(a)} = (2-1)(2+1)(2-2) = 1 \times 2 \times (-1) = -2$ ✓

-5 (۲)

$a - 1 < 0 \Rightarrow a < 1$

$\Delta < 0 \Rightarrow (a-1)(a-1) - 4(a-1) < 0 \Rightarrow (a-1)(a-3) < 0 \rightarrow$ (1 | + | 3 | −) $\Rightarrow a \in (1, 3)$

$a < 1$
$a \in (1, 3)$ $\Big\} \cap \rightarrow \emptyset$ ✓

-6 (۱,۵)

$\frac{m^2(m^2+1)}{m-2} \rightarrow$ (0 | + | 2 | −) $\Rightarrow m \in (-\infty, 0) \cup (2, \infty)$ ✓

مضاعف

$$\frac{(x^2-x-4)(x-1)^2}{(x^2+x+1)(2-x)^2} \leq 0 \rightarrow \text{sign chart: } -2,\ 1^*,\ 2,\ 2 \rightarrow x \in [-2,2) \cup [4,+\infty)$$ (2) -7 ✓

$$f(x) = \frac{cx^2-2x}{x^2+4} < 2 \Rightarrow \frac{cx^2-2x-2x^2-8}{x^2+4} < 0 \Rightarrow \frac{x^2-2x-8}{x^2+4} < 0$$ (2) -8

$$\Rightarrow \text{sign chart: } -2,\ 4 \Rightarrow x \in (-2,4) \checkmark$$

$$\Rightarrow a=-2, b=4$$

$$\Rightarrow b-a = \boxed{6} \checkmark$$

$$\frac{cx^2-4x}{x+1} < 0 \Rightarrow \text{sign chart: } -1,\ 0,\ \frac{4}{c} \Rightarrow x \in (-\infty,-1) \cup (0,\frac{4}{c})$$

$$-1 < \frac{cx^2-4x}{x+1} \Rightarrow \frac{cx^2-cx+1}{x+1} > 0 \Rightarrow \text{sign chart: } -1 \Rightarrow x \in (-1,+\infty)$$

$\cap \rightarrow x \in (0,\frac{4}{c})$ (2) -9 ✓

$$\frac{x^2-10}{x} \leq 2 \Rightarrow \frac{x^2-cx-10}{x} \leq 0 \Rightarrow \text{sign chart: } -2,\ 0,\ 5 \Rightarrow x \in (-\infty,-2] \cup (0,5]$$ (2) -10 ✓