Date
Subject

امتحان الميد بتاعنا

① $y = \frac{1}{x}$ Find the domain

دالة كسرية

domain $= R - \{0\}$

② $y = \frac{1}{x}$ Find the range

range $= R - \{0\}$

③ $30^\circ = \frac{2\pi}{6}$ .... radians

④ $f(x) = \frac{x}{x^2+1}$ (odd/even)

$f(-x) = \frac{-x}{x^2+1}$

$\therefore f(x) = -f(x)$

$\therefore$ this function is odd

⑤ $f(x) = x^2 \cos x$ (odd/even)

$f(-x) = x^2 \cos -x$

cos ← تلغي السالب

$f(-x) = x^2 \cos x$

$\therefore f(x) = f(-x)$

$\therefore$ this function is even

⑥ $y = \frac{|3x+1|}{2}$ the value of (x) that satisfy

$\frac{3x+1}{2} < \frac{1}{1}$

$3x+1 < 2$

$3x < 1$

$x < \frac{1}{3}$

$\frac{-3x-1}{2} < \frac{1}{1}$

$-3x-1 < 2$

$-3x < 3$

$x < -1$

$\therefore$ is $-1 < x < \frac{1}{3}$

⑦ $y = \sqrt{a^2 - x^2}$ Find the domain

domain $= (-3, 3)$

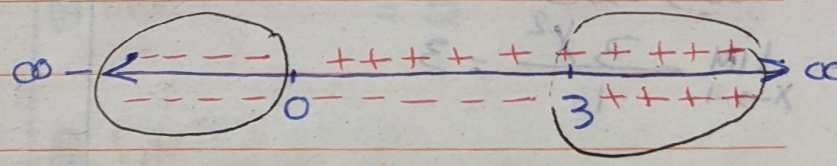
⑧ $y = \sqrt{a^2 - x^2}$ Find the range

range $= (-3, 3)$

⑨ $y = \sqrt{\frac{x}{x-3}}$ Find the domain

$\sqrt{\frac{x}{x-3}} \geq 0$

3 = الغلط، أصغر / 0 = البسط، أصغر



$\therefore$ domain $=]-\infty, 0[\cup]3, \infty[$

Sat Sun Mon Tue Wed Thu Fri

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(10) $y = \frac{\sqrt{x}}{x-3}$ Find the range

$y^2 = \frac{x}{x-3}$

$y^2 x - 3y^2 = x$

$x - y^2 x = -3y^2$

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

$x = \frac{-3y^2}{1-y^2}$

مجال المقدار = مجال الدالة

$\therefore$ range $= R / \{\pm 1\}$

(11) $\lim_{x \to 0^+} \frac{1}{x} = \infty$

(12) $\lim_{x \to 0^-} \frac{1}{x} = -\infty$

(13) $\lim_{x \to 2} \frac{x^2+1}{x^2-1}$

$\lim_{x \to 2} \frac{(2)^2+1}{(2)^2-1} = \frac{5}{3}$

(14) $\lim_{x \to -1} \frac{x^3+1}{x+1}$

قاعدة لوبيتال

$\lim_{x \to -1} \frac{3x^2}{1} = 3$

(15) $\lim_{x \to \infty} \frac{x^3+2x+1}{2x^4+x^2+1}$

$= 0$

(16) $\lim_{x \to 0} \frac{\sqrt{x+5}-\sqrt{5}}{x}$

$\lim_{x \to 0} \frac{\sqrt{x+5}-\sqrt{5}}{x} \times \frac{\sqrt{x+5}+\sqrt{5}}{\sqrt{x+5}+\sqrt{5}}$

$= \frac{x+5-5}{x(\sqrt{x+5}+\sqrt{5})} = \frac{1}{2\sqrt{5}}$

(17) $\lim_{x \to \infty} \frac{3x^2+2x+1}{2x+1} = \infty$

(18) $\lim_{x \to \infty} \frac{x^3+2x+1}{3x^3+2x+1} = \frac{1}{3}$

(19) $\lim_{x \to 0} \frac{\sin 5x}{9x} = \frac{5}{9}$

(20) $\lim_{x \to 0} \frac{\tan 5x}{\sin 7x} = \frac{5}{7}$

(21) $f(x) = \begin{cases} x^2+ax+3 \\ 2x+7 \end{cases}$ $a=?$ / $x=1$

$\therefore$ this function is continuos

$\therefore \lim_{x \to 1^+} = \lim_{x \to 1^-}$

$1+a+3 = 9$

$a+4 = 9$

$a = 5$