HL1 Quiz #5 Name: Jerry 9/10

下次小心哦 给你一朵小发发

Mark each of the first nine statements as true or false. In question ten draw the required graph

T 1. If the function f is self-inverse and $f(5) = 2$, then $f(2) = 5$.

F 2. $\arcsin 0.5 = \frac{5\pi}{6}$. $\frac{\pi}{6}$

T 3. When $x^3 + x^2 + x + 1$ is divided by $x - i$ the remainder is 0. $-i - 1 + i + 1$

F 4. The maximum value of the quadratic function $f(x) = 6 - x - x^2$ is 6. $-x^2 - x + 6$
$= -(x^2 + x + \frac{1}{4}) + 6 + \frac{1}{4}$
$= -(x + \frac{1}{2})^2 + \frac{25}{4}$

F 5. $-100 \bmod 12 = 4$. (8) -4不在 mod 值域 $\Rightarrow$非模数

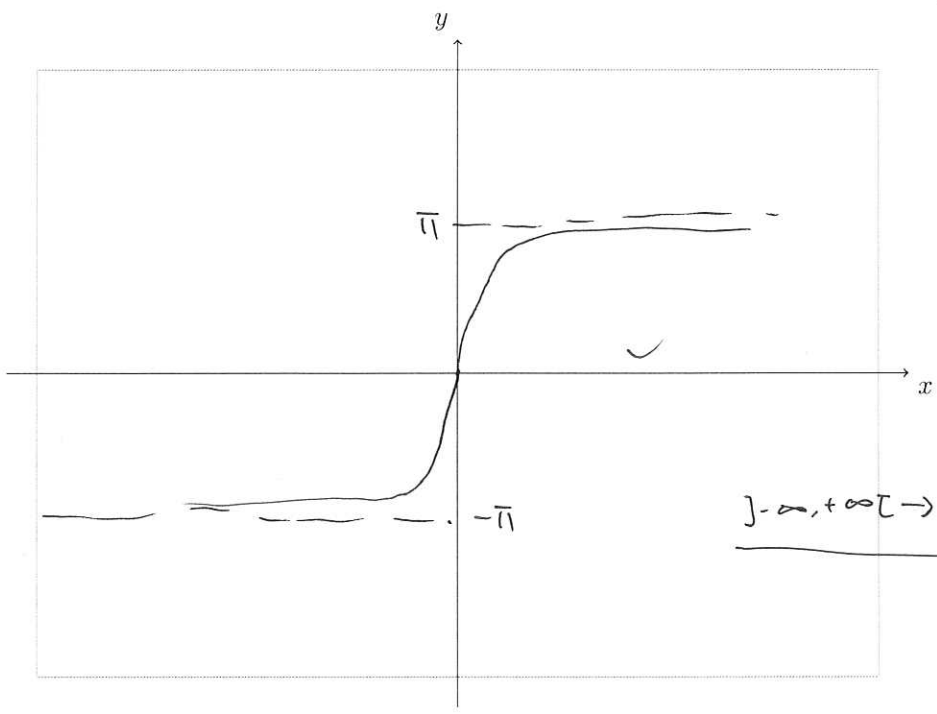
T 6. The constant term in the expansion of $(x^3 - \frac{2}{x})^4$ is -32. $\binom{4}{1} x^3 \cdot (-\frac{2}{x})^3 = 4 \cdot x^3 \cdot (-\frac{8}{x^3}) = -32$

T 7. The function $f: \mathbb{R} \to \mathbb{Z}$ with rule $f(x) = \lfloor x \rfloor$ is surjective but not injective.

T 8. $101 = 145_8$. $64 + 32 + 5 = 96 + 5 = 101$

F 9. If θ_1, θ_2, θ_3 are the periods of the sine, cosine and tangent functions then $\theta_1 + \theta_2 + \theta_3 = 6\pi$. $2\pi \ 2\pi \ \pi$ (5π)

10. Draw the graph of $f(x) = 2 \arctan x$ in the window below. Be sure to indicate any key features.



$\mathbb{R} \to]-\frac{\pi}{2}, \frac{\pi}{2}[$

$\downarrow$

$]-\infty, +\infty[$.

$]-\infty, +\infty[\to]-\pi, \pi[$.