

Здача 1.

$$f(x) = \sigma w \left(\frac{10n-x}{2} \right) + 3 \eta v \left(\frac{13n+x}{2} \right)$$

а) На Брел тоу тунд тал $f(x)$.

$$\bullet \sigma w \left(\frac{10n-x}{2} \right) = \sigma w \left(\frac{10n}{2} - \frac{x}{2} \right) = \sigma w \left(5n - \frac{x}{2} \right)$$

$$= \sigma w \left(\cancel{4n} + n - \frac{x}{2} \right) = \sigma w \left(n - \frac{x}{2} \right)$$

$$= -\sigma w \frac{x}{2}$$

$$\bullet \eta v \left(\frac{13n+x}{2} \right) = \eta v \left(\frac{13n}{2} + \frac{x}{2} \right) = \eta v \left(\frac{12n}{2} + \frac{n}{2} + \frac{x}{2} \right)$$

$$= \eta v \left(\cancel{6n} + \frac{n}{2} + \frac{x}{2} \right) = \eta v \left(\frac{n}{2} + \frac{x}{2} \right) =$$

$$= \eta v \left(\frac{n}{2} - \left(-\frac{x}{2} \right) \right) = \sigma w \left(-\frac{x}{2} \right) = \sigma w \frac{x}{2}$$

$$f(x) = -\sigma w \frac{x}{2} + 3 \sigma w \frac{x}{2} \Rightarrow f(x) = 2\sigma w \frac{x}{2}$$

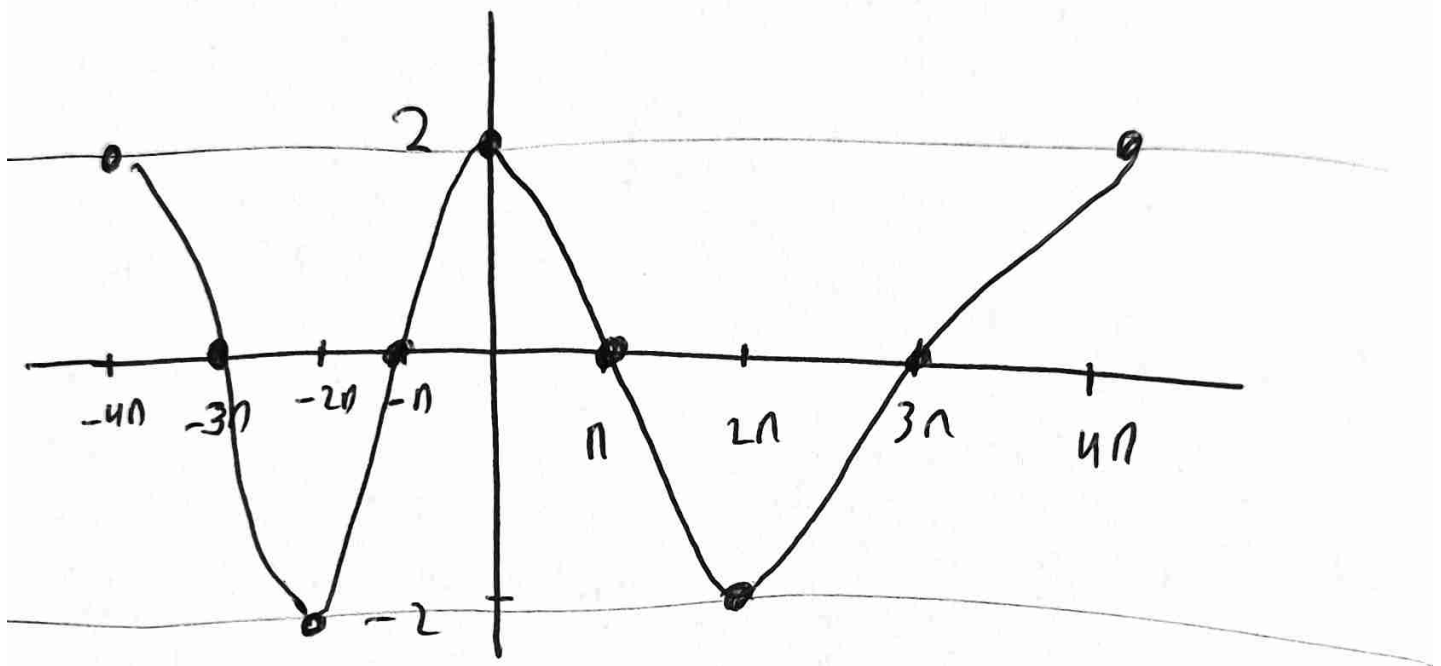
Β) Βρί περίοδο, μέγιστη - ελάχιστη τιμή

$$T = \frac{2\pi}{\omega} = \frac{2\pi}{\frac{1}{2}} = 4\pi$$

$$f(x) = 2 \sin \frac{x}{2}$$

$$M = |p| + c = |2| = 2$$

$$m = -|p| + c = -2$$



Θεμα 2ο

$$f(x) = \eta \rho(11\eta - 3x) - \sigma \omega\left(\frac{21\eta}{2} + 3x\right) + B$$

διφραστεί από το $A\left(\frac{35\eta}{18}, 2\right)$.

α) Βρού τον τύπο της $f(x)$

$$\bullet \eta \rho(11\eta - 3x) = \eta \rho(\cancel{10\eta} + \eta - 3x) = \eta \rho(\eta - 3x)$$

$$= \underline{\underline{\eta \rho 3x}}$$

$$\bullet \sigma \omega\left(\frac{21\eta}{2} + 3x\right) = \sigma \omega\left(\frac{20\eta}{2} + \frac{\eta}{2} + 3x\right) =$$

$$= \sigma \omega(\cancel{10\eta} + \frac{\eta}{2} + 3x) = \sigma \omega\left(\frac{\eta}{2} + 3x\right) =$$

$$= \sigma \omega\left(\frac{\eta}{2} - (-3x)\right) = \eta \rho(-3x) = \underline{\underline{-\eta \rho 3x}}$$

$$f(x) = \eta \rho 3x - (-\eta \rho 3x) + B$$

$$) f(x) = 2\eta \rho 3x + B$$

③ Bpd $\approx$ B.

$$f\left(\frac{350}{18}\right) = 2$$

$$f\left(\frac{350}{18}\right) = 2 \text{ nV } 3 \cdot \frac{350}{18} + B = 2$$

$$2 \text{ nV } \frac{350}{6} + B = 2$$

$$\begin{aligned} \rightarrow \text{ nV } \frac{350}{6} &= \text{ nV } \left(\frac{360}{6} - \frac{10}{6} \right) = \text{ nV } \left(6 - \frac{10}{6} \right) \\ &= \text{ nV } \left(-\frac{10}{6} \right) = -\text{ nV } \frac{10}{6} \\ &= -\frac{1}{2} \end{aligned}$$

$$\checkmark 2 \cdot \left(-\frac{1}{2} \right) + B = 2$$

$$-1 + B = ?$$

$$B = 3$$

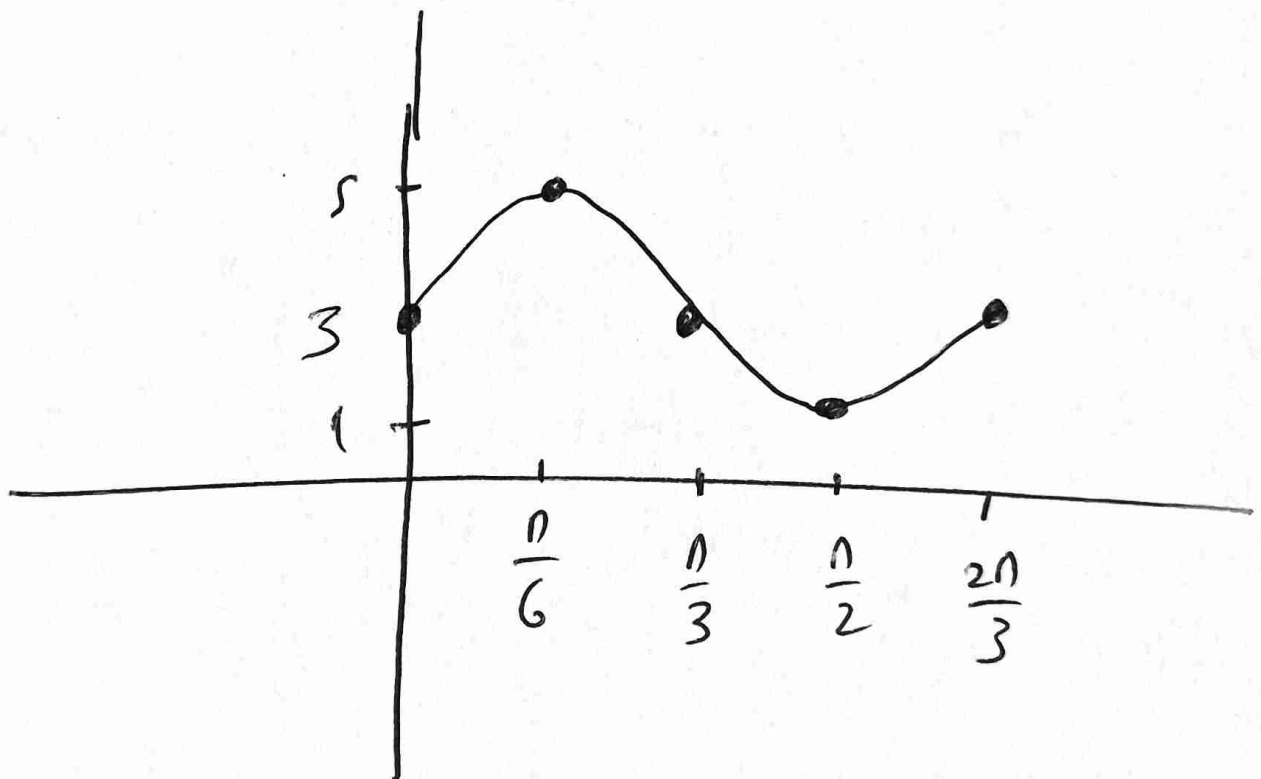
$$f(x) = 2\sqrt{3}x + 3$$

$$T = \frac{2\pi}{\omega} = \frac{2\pi}{3}$$

$$M = |2| + 3 = 5$$

$$m = -|2| + 3 = 1$$

$3x$	0	$\frac{\pi}{2}$	π	$\frac{3\pi}{2}$	2π
x	0	$\frac{\pi}{6}$	$\frac{\pi}{3}$	$\frac{\pi}{2}$	$\frac{2\pi}{3}$
$\sqrt{3}x$	0	1	0	-1	0
$2\sqrt{3}x$	0	2	0	-2	0
$f(x)$	3	5	3	1	3



1. Να αποδείξετε ότι.

$$a) \frac{1}{np^x} - \frac{np^x}{1+\sigma w^x} = \sigma w^x$$

$$\frac{1}{np^x} - \frac{np^x}{1+\sigma w^x} = \frac{\sigma w^x}{np^x}$$

$$\Leftrightarrow np^x (1+\sigma w^x)$$

$$\cancel{np^x(1+\sigma w^x)} \left(\frac{1}{\cancel{np^x}} - \cancel{np^x(1+\sigma w^x)} \frac{\cancel{np^x}}{1+\sigma w^x} \right) = \cancel{np^x(1+\sigma w^x)} \frac{\sigma w^x}{\cancel{np^x}}$$

$$1 + \sigma w^x - np^{2x} = (1 + \sigma w^x) \sigma w^x$$

$$1 + \cancel{\sigma w^x} - np^{2x} = \cancel{\sigma w^x} + \sigma w^{2x}$$

$$1 = np^{2x} + \sigma w^{2x}$$

$$1 = 1$$



$$\textcircled{B} \quad \frac{\eta p^2 x}{1 - \sigma \omega x} + \frac{\eta p^2 x}{1 + \sigma \omega x} = 2.$$

$$\frac{(1 - \sigma \omega x)(1 + \sigma \omega x)}{1 - \sigma \omega x} \eta p^2 x + \frac{(1 + \sigma \omega x)(1 - \sigma \omega x)}{1 + \sigma \omega x} \eta p^2 x = \frac{2(1 - \sigma \omega x)(1 + \sigma \omega x)}{1 + \sigma \omega x}$$

$$(1 + \sigma \omega x) \eta p^2 x + (1 - \sigma \omega x) \eta p^2 x = 2(1 - \sigma \omega^2 x)$$

$$\eta p^2 x + \cancel{\sigma \omega x \eta p^2 x} + \eta p^2 x - \cancel{\sigma \omega x \eta p^2 x} = 2 - 2\sigma \omega^2 x$$

$$2\eta p^2 x = 2 - 2\sigma \omega^2 x$$

$$\eta p^2 x = 1 - \sigma \omega^2 x$$

$$\eta p^2 x + \sigma \omega^2 x = 1$$

$$1 = 1$$

2. Av $\sigma_W X = -\frac{\sqrt{2}}{2}$ при $\frac{\pi}{2} \leq X \leq \pi$

Врд $\eta_P X, \sigma_{\varphi} X, \varepsilon_{\varphi} X$.



• $\sigma_W^2 X + \eta_P^2 X = 1$

• $\varepsilon_{\varphi} X = \frac{\eta_V X}{\sigma_W X}$

$\left(-\frac{\sqrt{2}}{2}\right)^2 + \eta_P^2 X = 1$

$\varepsilon_{\varphi} X = \frac{\frac{\sqrt{2}}{2}}{-\frac{\sqrt{2}}{2}}$

$\frac{\sqrt{2}^2}{2^2} + \eta_P^2 X = 1$

$\varepsilon_{\varphi} X = -1$

$\frac{2}{4} + \eta_P^2 X = 1$

$\sigma_{\varphi} X = -1$

$\frac{1}{2} + \eta_V^2 X = 1$

$\eta_P^2 X = 1 - \frac{1}{2}$

$\eta_P^2 X = \frac{1}{2}$

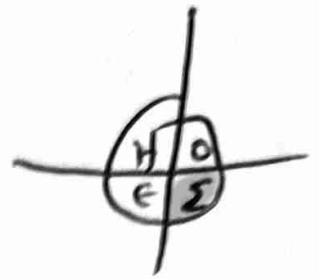
$\eta_P X = \sqrt{\frac{1}{2}}$

~~$\eta_P X = -\sqrt{\frac{1}{2}}$~~

$\eta_P X = \frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}$

$\eta_P X = \frac{\sqrt{2}}{2}$

3. A_v $\sigma\varphi x = -\sqrt{3}$



$$\varepsilon\varphi x = -\frac{1}{\sqrt{3}}$$

$$\varepsilon\varphi x = -\frac{\sqrt{3}}{3}$$

$$\sigma\omega^2 x = \frac{1}{1 + \varepsilon\varphi^2 x}$$

$$\sigma\omega^2 x = \frac{1}{1 + \left(-\frac{1}{\sqrt{3}}\right)^2} = \frac{1}{1 + \frac{1}{3}} = \frac{3}{4}$$

$$\sigma\omega x = \frac{\sqrt{3}}{2} \quad \text{e} \quad \sigma\omega x = -\frac{\sqrt{3}}{2}$$

$$\eta\rho^2 x + \sigma\omega^2 x = 1$$

$$\eta\rho^2 x + \left(\frac{\sqrt{3}}{2}\right)^2 = 1$$

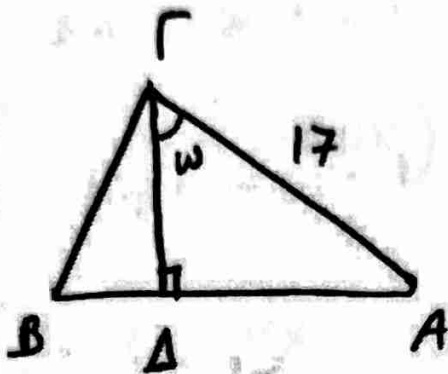
$$\eta\rho^2 x + \frac{3}{4} = 1 \Rightarrow \eta\rho^2 x = 1 - \frac{3}{4} = \frac{1}{4}$$

$$\eta\rho x = \frac{1}{2} \quad \text{e} \quad \left(-\frac{1}{2}\right)$$

Επορω Μαθημα

Ασκηση

1.



$$\text{Ar } \eta\psi\omega = \frac{15}{17} \text{ και } \sin \omega = \frac{4}{5}$$

$$\epsilon\psi\beta = \frac{4}{3}$$

Να βρωι $\angle\alpha, \angle\beta, \angle\gamma, \angle\delta$

2. Να βρωι η οριη τηλ παραστανι

$$A = \sin^2 \frac{61\pi}{3} + \sin^2 \frac{73\pi}{6} - 54 \frac{5\pi}{4}$$

3. Εστω χ ωστε $\pi < \chi < \frac{3\pi}{2}$

$$3\sqrt{5} \eta\psi^2 \chi - 2\eta\psi \chi - \sqrt{5} = 0.$$

$$A = \frac{3\eta\psi^2 \chi + \eta\psi \chi \cdot \sin \chi}{\sin \chi - 2 \epsilon\psi \chi}$$

4. Έστω ότι $\pi < x < \frac{3\pi}{2}$ και

$$\tan^2 x - \frac{2}{\sin x} = 8$$

Βρίνι $\sin x$, $\cos x$, $\tan x$, $\cot x$.

5. Να αποδείξετε τις ισότητες.

$$\text{α)} (\sin x - \cos x)^2 + (\sin x + \cos x)^2 = 2$$

$$\text{β)} \frac{1 + \tan^2 x}{\sec^2 x} - 2 \tan^2 x = 1$$

$$\text{γ)} \frac{1}{\sin x} - \frac{\tan x}{1 + \sin x} = \sec x$$

6. Να υπολογίσετε ή παραστήσετε

$$\frac{\sin\left(\frac{\pi}{2} - \theta\right) \cdot \cos\left(\frac{3\pi}{2} + \theta\right) \tan\left(2\pi - \theta\right)}{\cos\left(\frac{2\pi}{2} + \theta\right) \tan\left(\frac{\pi}{2} - \theta\right) \cos\left(3\pi + \theta\right)}$$

7. Να δίνω η γραφική παράστασή
αυτού πρώτα βρείτε $T, \text{Max}, \text{Min}$

α) $f(x) = 2 \sin 3x + 2$

β) $f(x) = 2 \sin 2x - 3$