$y = 2\cos\left(\frac{1}{2}x\right) - 1$ [118]

MID = -1

AMP = |2| = 2

PERIOD = $\frac{2\pi}{|\frac{1}{2}|}$ = 04π/4 = π

MID + AMP = 4

PERIOD/4 = π/2

y = 1 x = π

~~(π, 2)~~ y = -1 + 2 = 1

MAX = 2 > 0 = 0x

y = -1 + 2 = 1

MIN = -1 , x π ✓

MAX (0, 1) MIN (-1, π)

[119]

$y = -2x + 3$

~~y | x = 0~~

$-2x + 3 = y = 0$

$-y = 2x - 3$

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

x = 1

y = -2(1) + 3 = 1

x = 2

y = -2(2) + 3 = -1

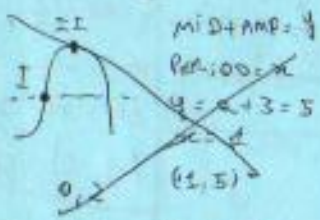
[120]

$y = -3\sin\left(\frac{\pi}{2}x\right) + 2$

AMP = |-3| = 3

MID = 2

PERIOD = $\frac{2\pi}{\frac{\pi}{2}}$ = 4/4 = 1



MID + AMP = 5

PERIOD = x

y = x + 3 = 5

x = 1

(1, 5)

-3 < 0 x → se x → +1

MID - AMP = MIN

MID + AMP = MAX

MAX = 2 + 3 = 5

MIN = 2 - 3 = -1

(0, 2) (1, -1)

[121]

$y = -\sin\left(\frac{\pi}{8}x\right) + 7$

MID = 7 AMP = |-1| = 1

PERIOD = $\frac{2\pi}{\frac{\pi}{8}}$ = 16/4 = 4

-1 < 0

MAX = 7 + 1 = 8

MIN = 7 - 1 = 6 ✓

(0, 7) (4, 6)

[122]

$y = -2\sin\left(\frac{\pi}{10}x\right) - 7$

MID = -7 AMP = |-2| = 2

MAX = -7 + 2 = -5

MIN = -7 - 2 = -9 ✓

PERIOD = $\frac{2\pi}{\frac{\pi}{10}}$ = 20/4 = 5

2 > 0 > -2

(0, -5); (5, -5)

[123]

$y = 6\cos\left(\frac{\pi}{4}x\right) - 2$

MID = -2 AMP = |6| = 6

PERIOD = $\frac{2\pi}{\frac{\pi}{4}}$ = 8/4 = 2

6 > 0 x(0) = MAX (0, 4) ✓

~~(0, 2), (2, 4)~~ (2, -2)

[124]

$y = 7\sin\left(\frac{1}{4}x\right) + 1$

MID = 1 AMP = |-7| = 7

PERIOD = $\frac{2\pi}{\frac{1}{4}}$ = 8π/4 = 2π

MAX = 1 + 7 = 8 ✓

MIN = 1 - 7 = -6

-7 < 0 (0, 1) (2π, 1)

$y = -3\cos\left(\frac{\pi}{6}x\right) - 6$ [125]

MID = -6 AMP = |-3| = 3

PERIOD = $\frac{2\pi}{\frac{\pi}{6}}$ = 12/4 = 3 ✓

MAX = -6 + 3 = -3 -3 < 0

MIN = -6 - 3 = -9 x = MIN

~~(0, -6), (2, -9)~~

(0, -9), (3, -6)

[125]

$-5\cos\left(\frac{\pi}{10}x\right) - 4 = y$

MID = -4 AMP = |-5| = 5

PERIOD = $\frac{2\pi}{\frac{\pi}{10}}$ = 32/4 = 8

MAX = -4 + 5 = 1 -5 < 0

MIN = -4 - 5 = -9 x = MIN

MIDDLE

~~(0, -9), (2, -7), (6, 1)~~

(0, -9), (8, 1) ✓

[126]

$y = -2\cos\left(\frac{1}{6}x\right) - 5$

MID = -5 AMP = |-2| = 2

PERIOD = $\frac{2\pi}{\frac{1}{6}}$ = 12π/4 = 3π

MAX = -5 + 2 = -3 -2 < 0

MIN = -5 - 2 = -7 x = MIN

~~(0, -3), (3π, -7)~~ (0, -7)

(3, -3) ✓

[127]

$3\sin\left(\frac{1}{2}x\right) + 4 = y$

MID = 4 AMP = |3| = 3

PERIOD = $\frac{2\pi}{\frac{1}{2}}$ = 6π/4 = 1,5π

3 > 0 , x = MID, y

MAX = 4 + 3 = 7

MIN = 4 - 3 = 1 ✓

(0, 4) ; (1,5π, 7)

[128]

$y = \cos\left(\frac{\pi}{12}x\right) + 6$

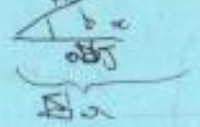
AMP = |1| = 1 MID = 6

PERIOD = $\frac{2\pi}{\frac{\pi}{12}}$ = 24/4 = 6

MAX = 7 1 > 0, y

MIN = 5 (0, 7) (3, 5)

$y = 2\cos(bx + c) + d$



✓

$y = 4\cos\left(\frac{1}{3}x\right) + 2$ [129]

AMP = |4| = 4 MID = 2

PERIOD = $\frac{2\pi}{\frac{1}{3}}$ = 10π/4 = 2,5π

4 > 0 , y = MAX ✓

(0, 6), (2,5π, 2)

$y = -5\sin\left(\frac{1}{7}\right) - 3$ [130] ✓

AMP = |-5| = 5 MID = -3

PERIOD = $\frac{2\pi}{\frac{1}{7}}$ = 14π/4 = 3,5π

-5 < 0, y = MIN

MAX = -3 + 5 = 2 (0, -3)

MIN = -3 - 5 = -8 (3,5π, -8)

$y = -4\cos(x) + 3$ [131]

AMP = |-4| = 4 MID = 3

PERIOD = $\frac{2\pi}{1}$ = 2π/4 = $\frac{1}{2}$π

MAX = 3 + 4 = 7 -4 < 0, y = MIN

MIN = 3 - 4 = -1 (0, 1), ($\frac{1}{2}$π, 7)

$y = \sin\left(\frac{1}{2}x\right) + 8$ [132]

AMP = |1| = 1 MID = 8

PERIOD = $\frac{2\pi}{\frac{1}{2}}$ = 4π/4 = π ✓

1 > 0, y = MAX (0, 8)

MAX = 8 + 1 = 9 (π, 8)

MIN = 8 - 1 = 7

$y = -3\cos\left(\frac{\pi}{6}x\right) - 6$ [133]

AMP = |-3| = 3 MID = -6 ✓

P = $\frac{2\pi}{\frac{\pi}{6}}$ = 12/4 = 3

MAX = -6 + 3 = -3 (0, -9)

MIN = -6 - 3 = -9 (3, -6)

$y = \cos\left(\frac{1}{5}x\right) + 6$ [134]

MID = 6 AMP = |1| = 1

PERIOD = $\frac{2\pi}{\frac{1}{5}}$ = 24/4 = 6

1 > 0 y MAX

MIN = 6 - 1 = 5 (0, 7); (6, 6)

MAX = 6 + 1 = 7 ✓

$y = 3\sin\left(\frac{\pi}{2}x\right) - 4$ [135]

MID = -4 AMP = |3| = 3

PERIOD = $\frac{\pi}{2}$ · 2π = 4/4 = 1

MIN = -4 - 3 = -9 y MAX

MAX = -4 + 3 = 1

~~(0, 1), (1, -4)~~

(0, -4), (1, -9) ✓

$y = -3\sin\left(\frac{\pi}{2}x\right) + 2$ ✓ [136]

MID = 2 AMP = |-3| = 3

PERIOD = $\frac{2\pi}{\frac{\pi}{2}}$ = 4/4 = 1

MIN = 2 - 3 = -1 (0, 2)

MAX = 2 + 3 = 5 (1, -1)

$y = -3\sin\left(\frac{\pi}{2}x\right) + 2$

23/01/2 [137]

$\vec{U} = (2, -4)$

MAGNITUDE = LENGHT ✓

$\|\vec{U}\| = \sqrt{a^2 + b^2}$

$\|\vec{U}\| = \sqrt{2^2 + (-4)^2} = \sqrt{20}$

[138]

$\vec{U} = (-6, -4)$ $(-2, -1)$

$|-6 - (-2)| = 4$ LENGHE

$|-4 - (-1)| = 3$ LENGHE

$\vec{U} = (3, 4)$ ✓

$\sqrt{3^2 + 4^2} = \sqrt{25} = 5$

(5, 3) $\sqrt{5^2 + 3^2} = \sqrt{34}$ = ✓

[139]

$\vec{U} = (-5, 3)$ [140]

$\sqrt{(5)^2 + 3^2} = \sqrt{34}$ ✓

$\vec{U} = (-5, 3)$ [141]

$\|\vec{U}\| = \sqrt{(-5)^2 + 3^2} = \sqrt{34}$ ✓

(-5, -4); (1, -7) [142]

LENGHE = (6, 7) ✓

$\|\vec{U}\| = \sqrt{6^2 + 7^2} = \sqrt{85}$

$\|U\| = \sqrt{4^2 + 6^2} = \sqrt{52}$ ✓

143

$\vec{U} = (-3, 6)$ ✓ [144]

$\|\vec{U}\| = \sqrt{(-3)^2 + 6^2} = \sqrt{45}$

$\|U\| = \sqrt{2^2 + 4^2} = \sqrt{65}$ ✓

145

$-5\sin\left(\frac{1}{7}x\right) - 3$ [146]

MID = -3 AMP = |-5| = 5

PERIOD = $\frac{2\pi}{\frac{1}{7}}$ = 14π/4 = 3,5π

-5 > 0 MAX = 2, MIN = -8

(0, -3)

(3,5π, -8) ✓

$-2\cos\left(\frac{1}{8}x\right) - 5$ [147]

MID = -5 AMP = 2 ✓

P = $\frac{2\pi}{\frac{1}{8}}$ = 12π/4 = 3π

-2 < 0

MIN = -7 MAX = -3

~~(0, -3), (3π, -7)~~

(0, -7); (3π, -3)

$-5\sin(x) + 7$ [150]

MID = 7 AMP = 1

P = $\frac{2\pi}{1}$ = 16/4 = 4

MIN = 6 MAX = 8

y = sin(x) ✓

(0, 7), (2, 6)

$y = 2\cos\left(\frac{1}{2}x\right) - 1$ [151]

MID = -1 AMP = 2 > 0

P = $\frac{2\pi}{\frac{1}{2}}$ = 4π/4 = π

MAX = 1 MIN = -3 ✓

(0, 1), (π, -1)

$-5\cos\left(\frac{\pi}{16}x\right) - 4$ [152]

AMP = 5 < 0 MID = -4

P = $\frac{2\pi}{\frac{\pi}{16}}$ = 32/4 = 8 ✓

MIN = -9 MAX = 1

(0, -9) ; (8, -4)

$y = -4\cos(x) + 3$ [153]

MID = 3 AMP = 4 < 0

P = $\frac{2\pi}{1}$ = 2π/4 = $\frac{1}{2}$π

MAX = 7 MIN = -1

~~(0, -1), ($\frac{1}{2}$π, 7)~~ ✓

(0, -1), ($\frac{1}{2}$π, 7)

$y = 3\sin\left(\frac{1}{2}x\right) + 4$ [154]

MID = 4 AMP = 3 > 0

P = $\frac{2\pi}{\frac{1}{2}}$ = 6π/4 = 1,5π

MIN = 1 MAX = 7 ✓

(0, 4); (1,5π, 7)

$4\cos\left(\frac{1}{5}\right) + 2$ [155]

MID = 2 AMP = 4 > 0

P = $\frac{2\pi}{\frac{1}{5}}$ = 10π/4 = 2,5π

MAX = 6 MIN = -2 ✓

(0, 6), (2,5π, 2)

$y = 6\cos\left(\frac{\pi}{4}x\right) - 2$ [149]

MID = -2 AMP = 6

P = $\frac{2\pi}{\frac{\pi}{4}}$ = 8/4 = 2

6 > 0, y = MAX

MIN = -8 MAX = 4

~~(0, -2), (2, 4)~~

(0, 4), (2, -2) ✓

AMP < 0 = —

← y → — —