cos(315) =
sin(315) =
OB = $\frac{\sqrt{2}}{2}$ $\theta=315$, $\alpha=45$, $\gamma=45$
BA = $-\frac{\sqrt{2}}{2}$
BO = cos(θ) $\frac{\sqrt{2}}{2}$
AB = sin(θ) = $-\frac{\sqrt{2}}{2}$ ✓ [207]

[205] $\theta = \frac{8\pi}{9} \times \frac{180}{\pi} = 160°$ ✓

[209] cos(330°) = ✓
sin(330°) = $\theta=330$, $\alpha=30$
BO = cos(θ) = $\frac{\sqrt{3}}{2}$
BA = sin(θ) = $-\frac{1}{2}$

[210] $\theta = 290 \times \frac{\pi}{180} = \frac{29\pi}{18}$ ✓

[211] cos(θ) = sin(θ) = $\frac{17}{20}$ QI
$\cos^2(\theta) = 1 - \left(\frac{17}{20}\right)^2 = \frac{400-289}{400} = \frac{111}{400}$
$\cos(\theta) = \sqrt{\frac{111}{400}} = \frac{\sqrt{111}}{20}$ ✓

[212] $-0.9 + 3 = 2.1$
MIN + AMP = MID ✓

[213] $y = -5\cos(2\pi x+1) - 10$
MID = −10 AMP = |−5| = 5
PERIOD = $\frac{2\pi}{2\pi} = 1$ ✓
$-5\cos(0+1) - 10 = (0, -7.5)$

[214] $y = -2\sin\left(\frac{2}{3}x - 4\right)$
PERIOD = $\frac{2\pi}{\frac{2}{3}} = \frac{6\pi}{2} = 3\pi$ ✓

[215] AMP = MID − MIN
AMP = −2.75 + 6.25 = 3.5 ✓

[216] (−10.4, −9.8) (−3.6, −1.2) MIN MAX
PERIOD = MAX − MIN

−3.6 − (−10.4) = 6.8
6.8 × 2 = 13.6 ✓

[216] $g(x) = -2\sin\left(\frac{\pi}{2}x - 3\right) - 5$
PERIOD $\frac{2\pi}{\frac{\pi}{2}} = \frac{4\pi}{\pi} = 4$
MID = 5 AMP = |2| = 2

[217] $\frac{2\pi}{\frac{\pi}{8}} = \frac{16\pi}{\pi} = 16$ = PERIOD

[218] (2.2, −2) (4.8, −2)
PERIOD = 4.8 − 2.2 = 2.6
2.6 × 2 = 5.2

[219] $y = 10\cos(6x - 1) - 4$
MID = −4

[220] $(-\pi, 7.7)$ $(-\frac{1}{3}\pi, -6.7)$ MAX MIN
$P = \pi - (-\frac{1}{3}\pi)$
$P = -\frac{2}{3}\pi \times 2 = -\frac{4}{3}\pi$
AMP = 7.7 − (−6.7) =
$7.7 - \frac{14.4}{2} = 0.5$ ✓

[221] $y = 2\cos(7x+5) + 1$
AMP = |2| = 2 ✓

[222] $(-\pi, 6.8)$ $(\pi, 1.2)$ MAX MIN
AMP = 6.8 − 1.2
AMP = $\frac{5.6}{2} = 2.8$ ✓

[223] MAX = 9.8, MID = 3.3 } 6.5
MAX − MID = AMP
$\frac{MAX - MIN}{2}$ = AMP [224]
$-2.3 - (-7.5) = \frac{5.3}{2} = 3.15$

[225] MID = 4.2 MIN = −4.4 ✓
= 8.6

$\frac{MAX - MIN}{2}$ = AMP
$\frac{-1.2 - (-9.8)}{2} = \frac{8.6}{2} = 4.3$ ✓

[208] PERIOD = $\frac{2\pi}{3\pi} = \frac{2}{3}$ ✓

[209] MAX = 2 AMP = 1.8
MID = MAX − AMP = 0.2 ✓

$y = 8\cos\left(5\pi x + \frac{3\pi}{2}\right) - 9$
MID = −9 ✓

[210] $y = -4\sin(3x - \pi) + 7$
AMP = |−4| = 4 ✓

[211] MID = 2.75 MAX: 6.75
MAX − MID = AMP = 4 ✓

[212] MID = −3.88 MAX = 3.88
+4.7x −4.7 ✓
P = 4.7 − (−4.7)
P = 9.4 × 4 = 37.6

[218] MAX: 7.7 MIN: −6.7
$\frac{MAX - MIN}{2}$ = AMP = $\frac{14.4}{2} = 7.2$ ✓

[213] MID: −3.8 MAX: 3.8
MAX − MID = AMP = 7.6 ✓

[214] MAX = 6.8 MIN: 1.2
$\frac{MAX - MID}{2}$, AMP = 2.8 ✓

[215] MID = MIN: 1.2
MID − MIN = AMP = 3.8 ✓

[216] $(-\pi, 6.8)$ $(\pi, 1.2)$ MAX MIN ✓
$P = \pi - (-\pi) = 2\pi$
$2\pi \times 2 = 4\pi$

[217] $(-\frac{1}{8}\pi, 6)$ $(\frac{1}{8}\pi, 6)$ MID MID ✓
$\frac{1}{8} - (-\frac{1}{8}) = \frac{2}{8} \times 2 = \frac{4}{8}$

(?, 2.75) $(\frac{5}{4}\pi, 6.75)$ [218]
MID MAX
$\frac{5}{4}\pi - (\frac{4}{4}\pi) = \frac{1}{4}\pi \times 4 = \pi$ ✓

[219] (−5.5, −5.5) (11.4, 11.4) MIN MAX
11.4 − (−5.5) = 16.9
16.9 × 2 = 33.8 ✓

29/08/2018 [220]
$h(x) = 7\sin\left(\frac{3\pi}{4}x - \frac{\pi}{4}\right) + 6$
AMP: |7| = 7 ✓

[221] $(\pi, -11)$ $(\frac{8}{3}\pi, -3.7)$ MIN MAX
AMP $\frac{MAX - MIN}{2}$
−3.7 − (−11) = 7.3
$\frac{7.3}{2} = 3.65$ ✓

[222] (−1.7, −10) (5.1, −10) MID MID ✓
P = xmin + xmax
P = 5.1 + (−1.7)
P = 6.8 × 2 = 13.6

[223] $y = \sin(3x+5)$
MID = 0 ✓

[224] $h(x) = 3\sin(4x - 2) - 3$
$P = \frac{2\pi}{4} = \frac{1}{2}\pi$ ✓

[225] $(\pi, -11)$ $(\frac{8}{3}\pi, -3.7)$ MIN MAX ✓
AMP = $\frac{-3.7 - (-11)}{2} = \frac{7.3}{2}$
AMP = 3.65
~~−3.7 + 3.65 = −0.5~~
−3.7 − (3.65) = −7.35

[226] $f(x) = 5\sin\left(\frac{\pi}{2}x - \pi\right) + 3$
$5\sin\left(\frac{\pi}{2}x\right)$
sin(x) = (0, 0) = MID
sin(x) = $(\frac{\pi}{2}, 1)$ = MAX

$\frac{\pi}{2} = \frac{180}{2}°$
$\sin(x) \neq 5\sin\left(\frac{\pi}{2}x\right)$
(0, 0)   (0, 0)
$(\frac{\pi}{2}, 1)$ (1, 5)
$5\sin\left(\frac{\pi}{2}x - \pi\right) + 3 =$ ✓
$9\sin\left(\frac{\pi}{2}(x-2)\right) + 3$
MID = 2 − 2 = 0 (2, 3)
MAX = 3 − 2 = 1 (3, 8)

[227] MAX(−2, −3)
MIN(−2.5, −9)
f(x) = ?
AMP = $\frac{-3 - (-9)}{2}$
AMP = 3 MID = −6
P = −2 + 2.5 = 0.5
P = 0.5 × 2 = 1
f(x) = a cos(bx + c) + d
cos(x) = (0, 1) P = π
$x\frac{2\pi}{2} = 2\pi \to \cos(2\pi x)$
−1
cos(x) → x·2π
AMP = 3 → 3cos(2πx)
0.5π
−3
3cos(2πx) − 6
~~(0, 3)~~ TO GRAPH
MAX 3cos(2πx + 4π) − 6

[228] $f(x) = 3\cos(\pi(x+4)) + 2$
f(0) =
f(x) =
AMP = 3 $P = \frac{2\pi}{\pi} = 2$
$\pi(x+4) = \pi x + 4\pi$
~~$2\pi(x+4) = 2\pi x + 8\pi$~~
$(2+4)\pi = 2\pi + 4\pi = 6\pi$
cos(x) = (0, 1) P = π
~~$f = \pi \cdot \frac{2}{\pi} = 2$~~
$3\cos(\pi(-4) + 4\pi)$
$= 3\cos(-3\pi)$
$3\cos(\pi(-4) + 4\pi)$
$= 3\cos(0) = 3$
x = −4 (−4, 5) ✓
x = −2 ~~(−2, 3)~~
R: cos(x) to cos(πx)
$\frac{\pi}{2}$ to $\frac{\pi}{2} \cdot \frac{1}{\pi} = 0.5$
cos(πx) to 3cos(πx)
(0, 1) to (0, 3)
3cos(πx) to 3cos(π(x+4))
+2 = 3cos(π(x+4)) + 2
= LEFT +4, UP +2
(−4, 5) (−3, 2)
MAX MID

[229] h(x) = a sin(bx + c) + d
MID = (0.5, −3)
MIN = (−1.5, −8)
P = 0.5 − (−1.5)
P = 2 × 4 = 8
AMP = $\frac{-3 - (-8)}{2} = \frac{5}{2}$
AMP = 2.5
sin(x) = (0, 0)
sin(x) = $(\frac{\pi}{2}, 1)$

~~MAX = 0.5 + 2 = 2.5~~
MAX (0.5 + 2 = 2.5 x)
MAX = 2.5 + 0.5 = 2 y
MAX = (2.5, 2)
P = 8 $x \cdot \frac{2\pi}{8} = \frac{\pi}{4}$
$\sin\left(\frac{\pi}{4}x\right)$
AMP = MAX − MIN = 5
$5\sin\left(\frac{\pi}{4}x\right)$
(0, 0) to (0.5, −3)
$5\left(\sin\left(\frac{\pi}{4}(x - 0.5)\right)\right) - 3$
$= 5\sin\left(\frac{\pi}{4}x - \frac{\pi}{8}\right) - 3$ ✓

[230] $g(x) = 2\sin\left(\frac{2}{3}x - \frac{\pi}{3}\right) + 4$
AMP: 2 MID = +4
PERIOD = $\frac{2\pi}{\frac{4}{3}} = 6\pi$
sin(0) = (0, 0) MAX = $\frac{\pi}{2}$
$\sin\left(\frac{1}{3}x - \frac{\pi}{3}\right) = \sin\left(\frac{1}{3}(x - \pi)\right)$
$\sin\left(\frac{1}{3}(x - \pi)\right)$
$\sin\left(\frac{1}{3}(3 - \pi)\right) =$ ✓
$\sin\left(1 - \frac{\pi}{3}\right)$ (2.5π, 6) (π, 4)
x ≥ 3, $\sin\left(\frac{1}{3}(x - \pi)\right)$
$\sin\left(\frac{1}{3}(\pi - \pi)\right) = \sin\left(\frac{1}{3}\right)$
$\frac{\pi}{2} = \frac{3\pi}{2}$
$1 = \frac{1}{3} = 3$ $\frac{\pi}{2}$ to $\frac{3\pi}{2}$