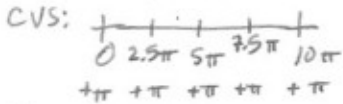


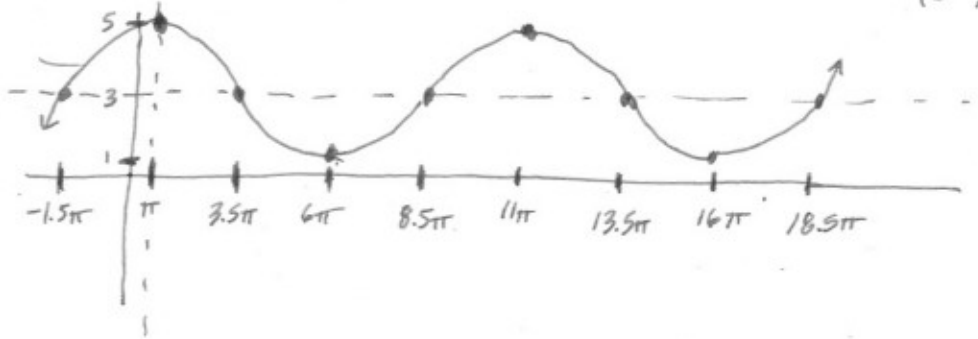
Sinusoids & Tarzan Wksht KEY

(I) ① $y = 2 \cos \frac{1}{5}(x - \pi) + 3$

- $|A| = 2$
- $|B| = \frac{1}{5}, P = 10\pi$
- C = Right π
- D = up 3

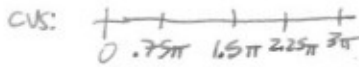


New CVS: π 3.5π 6π 8.5π 11π



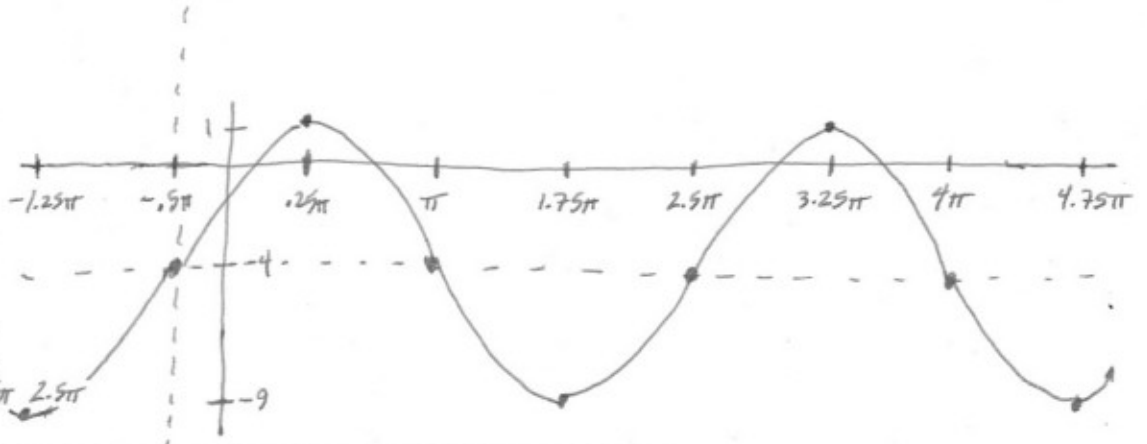
② $y = 5 \sin \frac{2}{3}(x + \frac{\pi}{2}) - 4$

- $|A| = 5$
- $|B| = \frac{2}{3}, P = \frac{2\pi}{2/3} = 3\pi$
- C = Left $\frac{\pi}{2}$ (left + .5π)
- D = down 4



- .5π - .5π - .5π - .5π - .5π

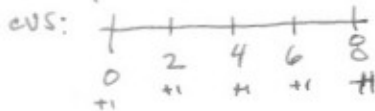
New CVS: -.5π .25π π 1.75π 2.5π



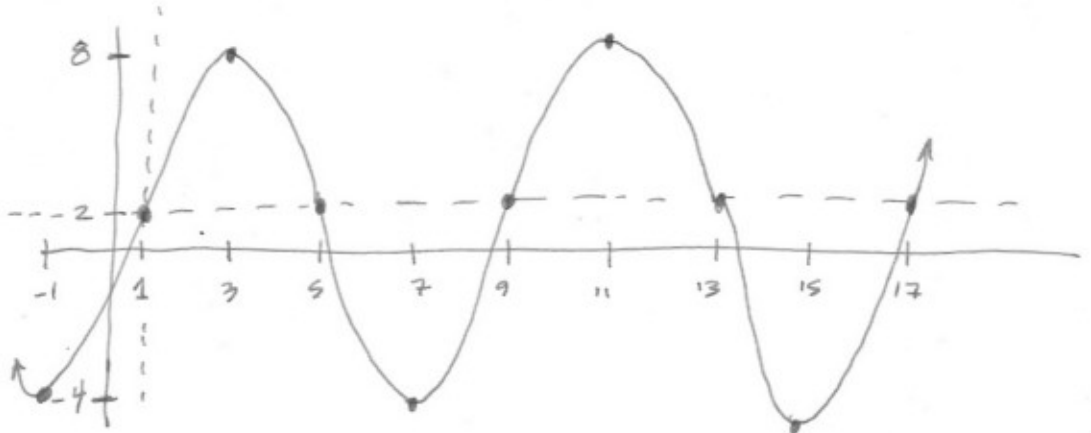
③ $y = 6 \sin(\frac{\pi}{4}x - \frac{\pi}{4}) + 2$

$y = 6 \sin(\frac{\pi}{4}(x-1)) + 2$

- $|A| = 6$
- $|B| = \frac{\pi}{4}, P = 8$
- C = Rt. 1
- D = up 2

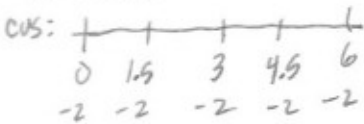


New CVS: 1 3 5 7 9

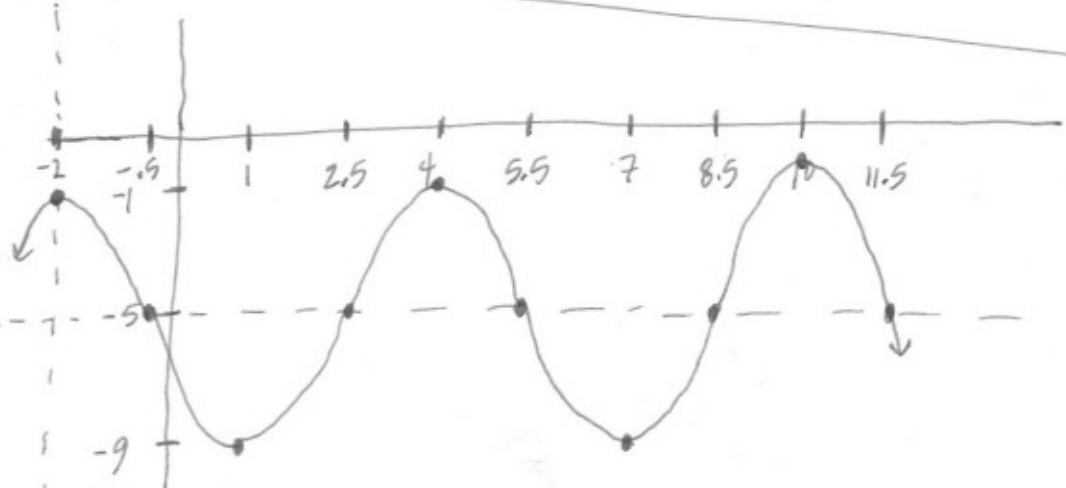


④ $y = 4 \cos \frac{\pi}{3}(x+2) - 5$

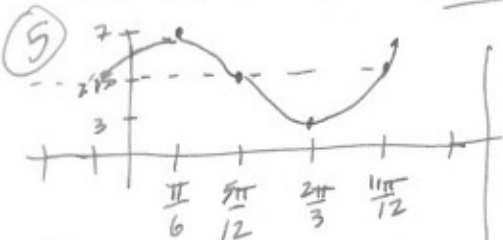
- $|A| = 4$
- $|B| = \frac{\pi}{3}, P = 6$
- C = Left 2
- D = down 5



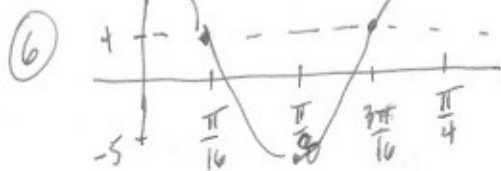
New CVS: -2 -0.5 1 2.5 4



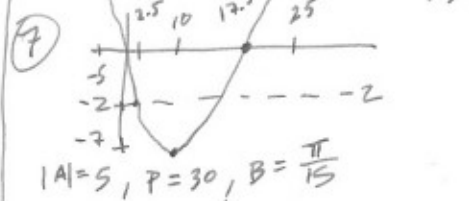
Sinusoid & Tarzan KEY



$|A|=2$
 $P = \frac{7\pi}{6} - \frac{\pi}{6} = \frac{6\pi}{6} = \pi$
 $B = \frac{2\pi}{P} = \frac{2\pi}{\pi} = 2$
 $D = 5$
 $y = 2\cos(2(x - \frac{\pi}{6})) + 5$
 $y = -2\cos(2(x - \frac{2\pi}{3})) + 5$
 $y = -2\cos(2(x + \frac{\pi}{3})) + 5$
 $y = 2\sin(2(x + \frac{\pi}{12})) + 5$
 $y = 2\sin(2(x - \frac{11\pi}{12})) + 5$
 $y = -2\sin(2(x - \frac{5\pi}{12})) + 5$
 \vdots



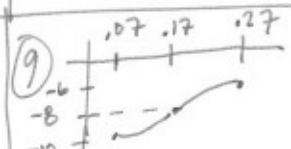
$|A|=9$
 $P = \frac{\pi}{4}, B = 8, D = 4$
 $y = 9\cos(8x) + 4$
 $y = -9\cos(8(x - \frac{\pi}{8})) + 4$
 $y = -9\sin(8(x - \frac{\pi}{16})) + 4$
 $y = 9\sin(8(x - \frac{3\pi}{16})) + 4$
 $y = 9\cos(8(x - \pi)) + 4$
 $y = 9\cos(8(x - \frac{\pi}{4})) + 4$
 $y = 9\sin(8(x + \frac{\pi}{16})) + 4$
 \vdots



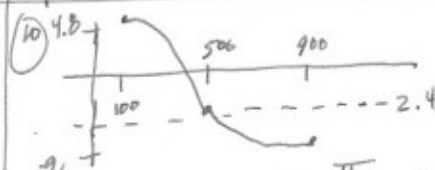
$|A|=5, P=30, B = \frac{\pi}{15}$
 $y = 5\cos(\frac{\pi}{15}(x+5)) - 2$
 $y = -5\cos(\frac{\pi}{15}(x+20)) - 2$
 $y = 5\sin(\frac{\pi}{15}(x+12.5)) - 2$
 $y = -5\sin(\frac{\pi}{15}(x-2.5)) - 2$
 $y = 5\cos(\frac{\pi}{15}(x-25)) - 2$
 $y = -5\cos(\frac{\pi}{15}(x-10)) - 2$
 $y = 5\sin(\frac{\pi}{15}(x-17.5)) - 2$
 $y = -5\sin(\frac{\pi}{15}(x-32.5)) - 2$
 \vdots



$|A|=0.05, P=8, B = \frac{\pi}{4}, D = 0.25$
 $y = 0.05\cos(\frac{\pi}{4}(x+1)) + 0.25$
 $y = 0.05\sin(\frac{\pi}{4}(x+3)) + 0.25$
 $y = -0.05\cos(\frac{\pi}{4}(x-3)) + 0.25$
 $y = -0.05\sin(\frac{\pi}{4}(x-1)) + 0.25$
 $y = 0.05\cos(\frac{\pi}{4}(x-7)) + 0.25$
 $y = 0.05\sin(\frac{\pi}{4}(x-5)) + 0.25$
 \vdots

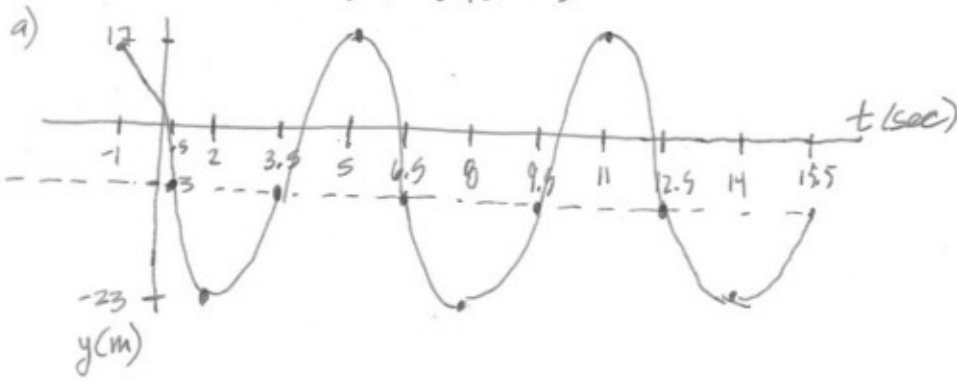


$|A|=2, P = \frac{4}{10}, B = 5\pi, D = -8$
 $y = 2\cos(5\pi(x+0.13)) - 8$
 $y = -2\cos(5\pi(x-0.07)) - 8$
 $y = -2\sin(5\pi(x+0.03)) - 8$
 $y = 2\sin(5\pi(x-0.17)) - 8$
 $y = -2\sin(5\pi(x-0.27)) - 8$
 $y = 2\cos(5\pi(x-0.27)) - 8$
 \vdots



$|A|=7.2, P=1600, B = \frac{\pi}{800}, D = -2.4$
 $y = 7.2\sin(\frac{\pi}{800}(x-1300)) - 2.4$
 $y = 7.2\sin(\frac{\pi}{800}(x+300)) - 2.4$
 $y = 7.2\cos(\frac{\pi}{800}(x-100)) - 2.4$
 $y = -7.2\sin(\frac{\pi}{800}(x-500)) - 2.4$
 $y = -7.2\cos(\frac{\pi}{800}(x-900)) - 2.4$
 $y = -7.2\cos(\frac{\pi}{800}(x+700)) - 2.4$
 $y = 7.2\sin(\frac{\pi}{800}(x+300)) - 2.4$
 \vdots

$|A|=20, P=2(3)=6, B=\frac{\pi}{3}, D=-3$



b) $y = -20 \cos\left(\frac{\pi}{3}(t-2)\right) - 3$, $y = -20 \sin\left(\frac{\pi}{3}(t-5)\right) - 3$, $y = 20 \cos\left(\frac{\pi}{3}(t-5)\right) - 3$, $y = 20 \sin\left(\frac{\pi}{3}(t-3.5)\right) - 3$...
 ↳ most common ↳

c) i. $y(3.8) = 3.180m$, 3.180m over water heading further out over water.

ii. $y(8.52) = -20.107m$, 20.107m over land heading toward river bank

iii. $y(22) = 7m$, 7m over water heading further out over water

iv. $y(5min) = y(300sec) = 7$, 7m over water heading toward bank

v. $y(2hr) = y(7200sec) = 7$, 7m over water heading toward bank

vi. $y(3days) = y(259200sec) = 7$, 7m over water heading toward bank

d) @ $t=0$ sec, $y(0) = 7$, 7m over water heading toward bank

e) over riverbank means on the x-axis. the 5th positive x-intercept is $\approx 12.356sec. = t$

f) 16m over land corresponds to $y = -16$, y intersects this for 3rd pos time @ $t \approx 7.176sec$

g) trace over to $t=14$ sec. here you see Tarzan's at low point (Nadir). If this now was $t=0$ (the y-axis), the new eq. would be $y = -20 \cos\left(\frac{\pi}{3}t\right) - 3$