

Name: _____

4.4 Homework

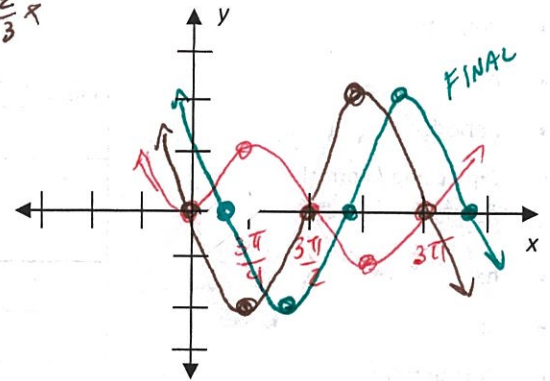
1) $y = -2\sin\frac{2}{3}(x - \frac{\pi}{2})$

- a: -2
- Amp: 2
- Reflect: yes
- b: $\frac{2}{3}$
- Period: 3π
- Exp / comp / normal
- Scale: $3\pi/4$
- h: $\pi/2$
- k: $none$
- Translation: $Right + \frac{\pi}{2}$

$P = \frac{2\pi}{\frac{2}{3}} = 3\pi$

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

Original	a / b shift	h / k shift
$(0, 0)$	$(0, 0)$	$(\frac{\pi}{2}, 0)$
$(\frac{\pi}{2}, 1)$	$(\frac{3\pi}{4}, -2)$	$(\frac{5\pi}{4}, -2)$
$(\pi, 0)$	$(\frac{3\pi}{2}, 0)$	$(2\pi, 0)$
$(\frac{3\pi}{2}, -1)$	$(\frac{9\pi}{4}, 2)$	$(\frac{11\pi}{4}, 2)$
$(2\pi, 0)$	$(3\pi, 0)$	$(\frac{7\pi}{2}, 0)$



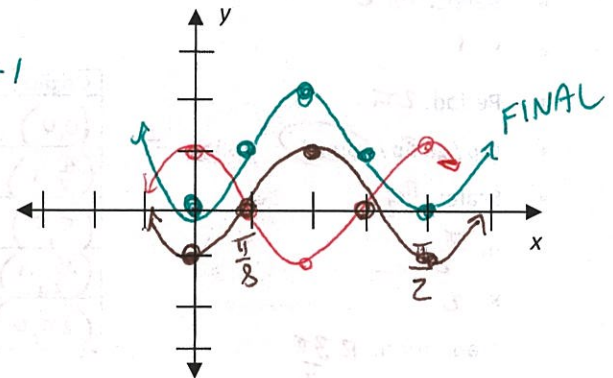
2) $y = -\cos 4x + 1$

- a: -1
- Amp: 1
- Reflect: yes
- b: 4
- Period: $\frac{\pi}{2}$
- Exp / comp / normal
- Scale: $\pi/8$
- h: 0
- k: 1
- Translation: $up 1$

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

$\cos x$
 $-\cos 4x$
 $-\cos 4x + 1$

Original	a / b shift	h / k shift
$(0, 1)$	$(0, -1)$	$(0, 0)$
$(\frac{\pi}{2}, 0)$	$(\frac{\pi}{8}, 0)$	$(\frac{\pi}{8}, 1)$
$(\pi, -1)$	$(\frac{\pi}{4}, 1)$	$(\frac{\pi}{4}, 2)$
$(\frac{3\pi}{2}, 0)$	$(\frac{3\pi}{8}, 0)$	$(\frac{3\pi}{8}, 1)$
$(2\pi, 1)$	$(\frac{\pi}{2}, -1)$	$(\frac{\pi}{2}, 0)$

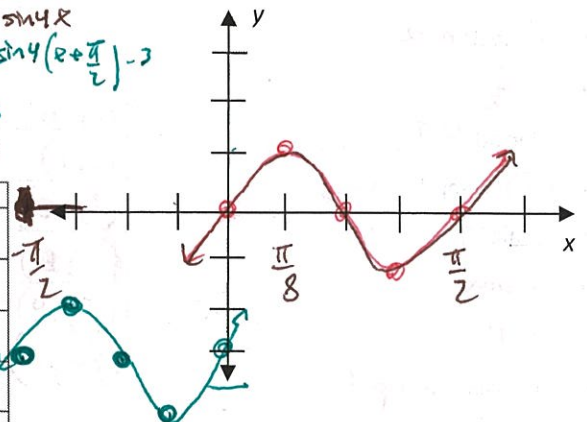


3) $y = \sin(4x + \frac{\pi}{2}) - 3$

- a: 1
- Amp: 1
- Reflect: $none$
- b: 4
- Period: $\frac{\pi}{2}$
- Exp / comp / normal
- Scale: $\pi/8$
- h: $-\pi/2$
- k: -3
- Translation: $L \pi/2$
D3

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

Original	a / b shift	h / k shift
$(0, 0)$	$(0, 0)$	$(-\frac{\pi}{2}, -3)$
$(\frac{\pi}{2}, 1)$	$(\frac{\pi}{8}, 1)$	$(-\frac{\pi}{8}, -2)$
$(\pi, 0)$	$(\frac{\pi}{4}, 0)$	$(-\frac{\pi}{4}, -3)$
$(\frac{3\pi}{2}, -1)$	$(\frac{3\pi}{8}, -1)$	$(-\frac{3\pi}{8}, -4)$
$(2\pi, 0)$	$(\frac{\pi}{2}, 0)$	$(0, -3)$



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

- a: $\frac{1}{2}$
- Amp: $\frac{1}{2}$
- Reflect: none
- b: 3
- Period: $\frac{2\pi}{3}$
- Exp / comp / normal
- Scale: $\pi/6$
- h: $-\frac{2\pi}{3}$
- k: 0
- Translation: $L \frac{2\pi}{3}$

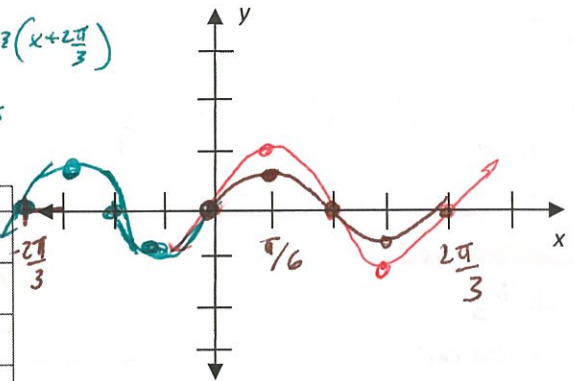
$P = \frac{2\pi}{3}$

$y = \sin x$
 $y = \frac{1}{2} \sin 3x$
 $y = \frac{1}{2} \sin 3(x + \frac{2\pi}{3})$

$y \cdot 0.5$
 $x \cdot (\frac{1}{3})$

$-\frac{2\pi}{3}$ to x's

Original	a / b shift	h / k shift
(0,0)	(0,0)	($-\frac{2\pi}{3}, 0$)
($\frac{\pi}{2}, 1$)	($\frac{\pi}{6}, \frac{1}{2}$)	($-\frac{\pi}{2}, \frac{1}{2}$)
($\pi, 0$)	($\frac{\pi}{3}, 0$)	($-\frac{\pi}{3}, 0$)
($\frac{3\pi}{2}, -1$)	($\frac{\pi}{2}, -\frac{1}{2}$)	($-\frac{\pi}{6}, -\frac{1}{2}$)
($2\pi, 0$)	($\frac{2\pi}{3}, 0$)	(0,0)



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

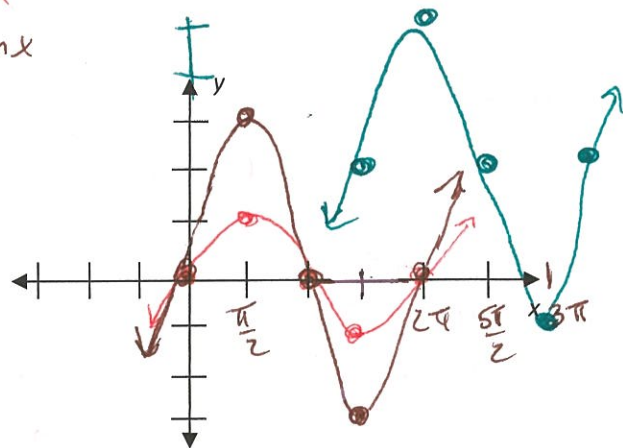
- a: 3
- Amp: 3
- Reflect: none
- b: 1
- Period: 2π
- Exp / comp / normal
- Scale: $\pi/2$
- h: $\frac{3\pi}{2}$
- k: 2
- Translation: $R \frac{3\pi}{2}$
 $U 2$

$y = \sin x$
 $y = 3 \sin x$

$y \cdot 3$

$+\frac{3\pi}{2}$ to x's
 $+\frac{2}{2}$ to y's

Original	a / b shift	h / k shift
(0,0)	(0,0)	($\frac{3\pi}{2}, 2$)
($\frac{\pi}{2}, 1$)	($\frac{\pi}{2}, 3$)	($2\pi, 5$)
($\pi, 0$)	($\pi, 0$)	($\frac{5\pi}{2}, 2$)
($\frac{3\pi}{2}, -1$)	($\frac{3\pi}{2}, -3$)	($3\pi, -1$)
($2\pi, 0$)	($2\pi, 0$)	($\frac{7\pi}{2}, 2$)



6) $y = 2 \cos \frac{1}{2}x + 1$

- a: 2
- Amp: 2
- Reflect: none
- b: $\frac{1}{2}$
- Period: 4π
- Exp / comp / normal
- Scale: π
- h: none
- k: 1
- Translation: up 1

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

$y = \cos x$
 $y = 2 \cos \frac{1}{2}x$

$y \cdot 2$
 $x \cdot 2$

$+1$ to y's

Original	a / b shift	h / k shift
(0,1)	(0,2)	(0,3)
($\pi/2, 0$)	($\pi, 0$)	($\pi, 1$)
($\pi, -1$)	($2\pi, -2$)	($2\pi, -1$)
($3\pi/2, 0$)	($3\pi, 0$)	($3\pi, 1$)
($2\pi, 1$)	($4\pi, 2$)	($4\pi, 3$)

