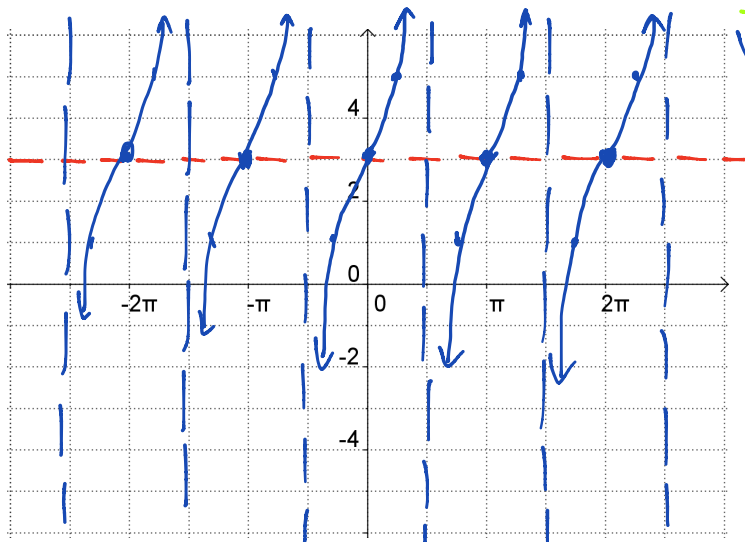


State the **transformations** in order. Sketch the graph of the given trig function. State the **Domain, Range, Asymptotes or Amplitude, and Period** of the function.

1. $f(x) = 2 \tan(x) + 3$ $\frac{\sin}{\cos}$



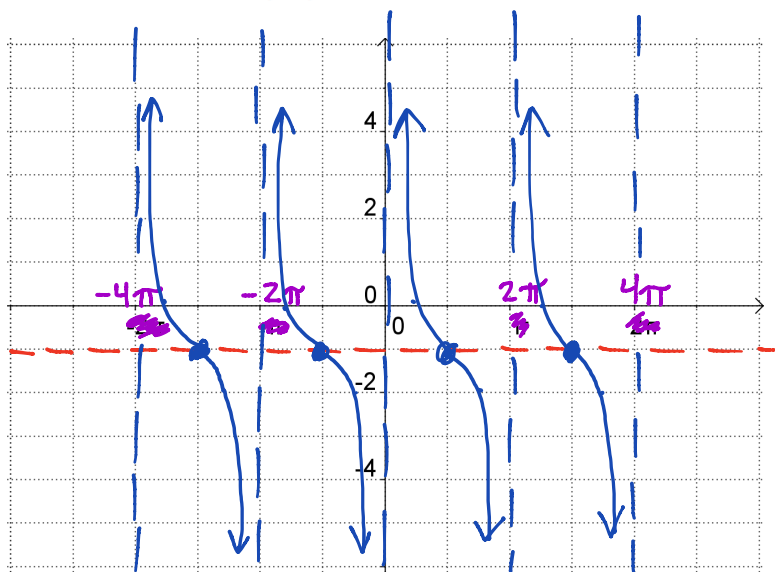
Vertical Stretch by 2.
Vertical Shift Up 3.

$\tan(0) = 0$
 $\tan(\frac{\pi}{2}) = \text{Undefined}$
 $\tan(\pi) = 0$
 $\tan(\frac{3\pi}{2}) = \text{Undefined}$

Domain: $\{x | x \neq \frac{\pi}{2} \pm k\pi\}$ Range: $(-\infty, \infty)$

Asymptotes: $\frac{\pi}{2} \pm k\pi$ Period: $\frac{\pi}{1} = \pi$

2. $f(x) = \cot(\frac{1}{2}x) - 1$ $\frac{\cos x}{\sin x}$



Horizontal Stretch by 2.
Vertical Shift Down 1.

$\cot(0) = \text{Undefined}$
 $\cot(\frac{\pi}{2}) = 0$
 $\cot(\pi) = \text{Undefined}$
 $\cot(\frac{3\pi}{2}) = 0$

Domain: $\{x | x \neq 0 \pm k2\pi\}$ Range: $(-\infty, \infty)$

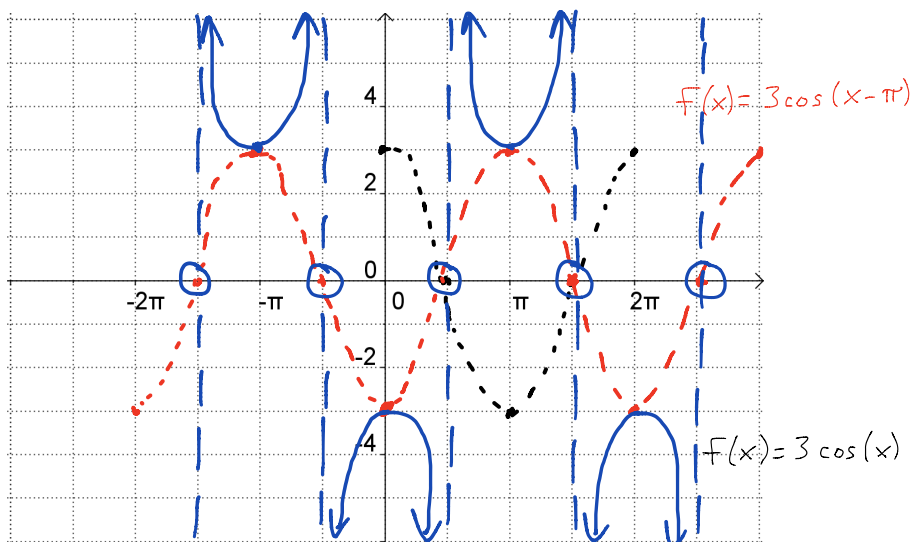
Asymptotes: $0 \pm k2\pi$ Period: $\frac{\pi}{\frac{1}{2}} = 2\pi$

3. $f(x) = 3\sec(x - \pi)$

$\sec \theta = \frac{1}{\cos \theta}$

$F(x) = 3\sec(x - \pi)$

Vertical stretch by 3
Horizontal shift right π



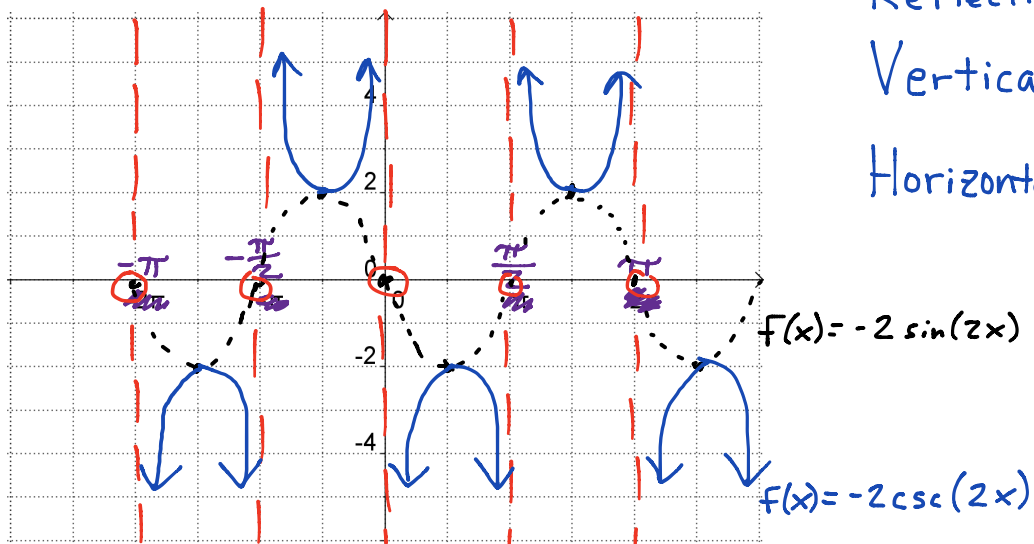
Domain: $\{x | x \neq \frac{\pi}{2} + k\pi\}$ Range: $(-\infty, -3] \cup [3, \infty)$

Asymptotes: $\frac{\pi}{2} + k\pi$ Period: $\frac{2\pi}{\omega} = 2\pi$

4. $f(x) = -2\csc(2x)$

$\csc \theta = \frac{1}{\sin \theta}$

Reflection over x-axis.
Vertical stretch by 2.
Horizontal shrink by $\frac{1}{2}$.



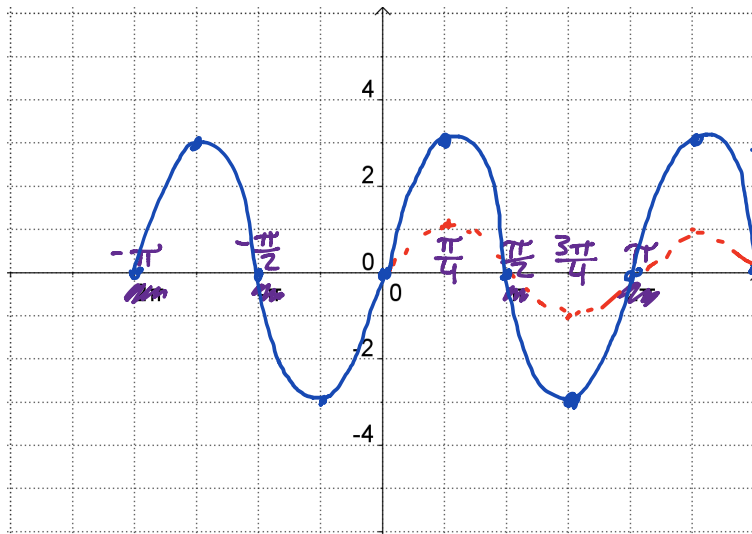
Domain: $\{x | x \neq 0 \pm k\frac{\pi}{2}\}$ Range: $(-\infty, -2] \cup [2, \infty)$

Asymptotes: $0 \pm k\frac{\pi}{2}$ Period: $\frac{2\pi}{2} = \pi$

Pre-Calculus 7.5 - 7.8 Test C

Write the transformations in order. Sketch the graph of the given trig function. State the Domain, Range, Amplitude, and Period of the function.

5. $f(x) = 3\sin(2x)$



Vertical stretch by 3
horizontal shrink by $\frac{1}{2}$

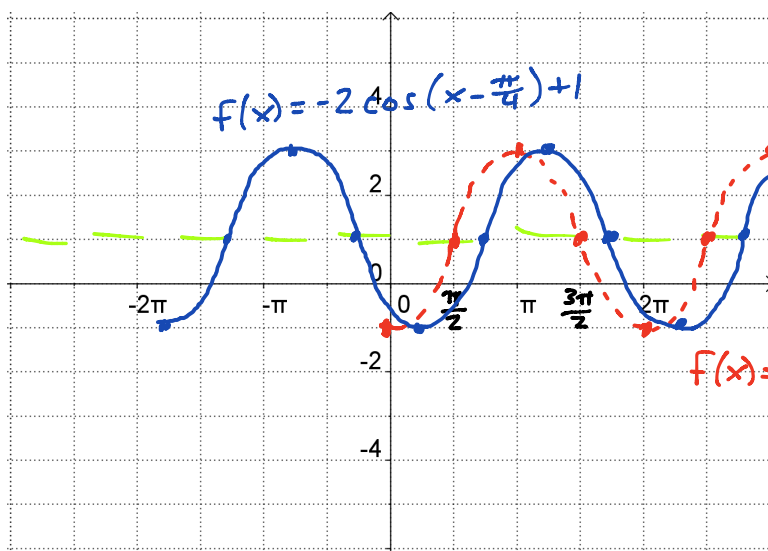
$f(x) = 3\sin(2x)$

$f(x) = \sin(2x)$

Domain: $(-\infty, \infty)$ Range: $[-3, 3]$

Amplitude: 3 Period: $\frac{2\pi}{2} = \pi$

6. $f(x) = -2\cos\left(x - \frac{\pi}{4}\right) + 1$



Reflect over x-axis.
Vertical stretch by 2.
Horizontal shift Right $\frac{\pi}{4}$.
Vertical shift up 1.

$f(x) = -2\cos(x) + 1$

Domain: $(-\infty, \infty)$ Range: $[-1, 3]$

Amplitude: 2 Period: $\frac{2\pi}{1} = 2\pi$

Pre-Calculus 7.5 - 7.8 Test C

List the transformations IN ORDER for the functions in #7-8.

4 WORDS

7. $f(x) = -\frac{1}{2}\sec((x - \pi)) + 1$

8. $f(x) = 4\sin\left(\frac{1}{2}\left(x + \frac{\pi}{2}\right)\right) - 2$

Reflect over x-axis

Vertical shrink by $\frac{1}{2}$

Horizontal shift right π

Vertical shift up 1

Vertical stretch by 4

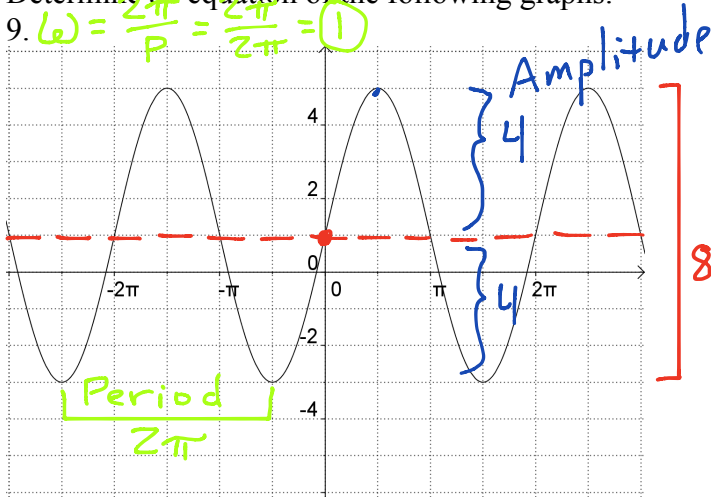
Horizontal stretch by 2

Horizontal shift left $\frac{\pi}{2}$

Vertical shift down 2

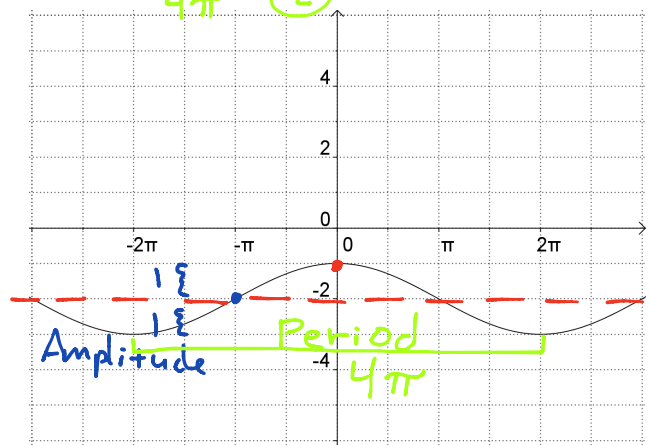
Determine an equation of the following graphs.

9. $\omega = \frac{2\pi}{P} = \frac{2\pi}{2\pi} = 1$



$f(x) = 4\sin(x) + 1$
 or
 $4\cos\left(x - \frac{\pi}{2}\right) + 1$

10. $\omega = \frac{2\pi}{4\pi} = \frac{1}{2}$



$f(x) = \cos\left(\frac{1}{2}x\right) - 2$
 or
 $\sin\left(\frac{1}{2}(x + \pi)\right) - 2$

FUNCTION	AMPLITUDE	PERIOD	DOMAIN	RANGE
11. $y = 3\cos(2x)$	3	$\frac{2\pi}{2} = \pi$	$(-\infty, \infty)$	$[-3, 3]$
12. $y = -2\sin\left(\frac{1}{3}x\right) + 3$	2	$\frac{2\pi}{\frac{1}{3}} = 6\pi$	$(-\infty, \infty)$	$[1, 5]$
13. $y = -6\cos(3x) + 1$	6	$\frac{2\pi}{3}$	$(-\infty, \infty)$	$[-5, 7]$
14. $y = -2 + \cos(x + \pi)$	1	2π	$(-\infty, \infty)$	$[-3, -1]$
15. $y = \cot(x) + 2$	Find Asymptotes $0 \pm k\pi$	$\frac{\pi}{1} = \pi$	$\{x \mid x \neq 0 \pm k\pi\}$	$(-\infty, \infty)$