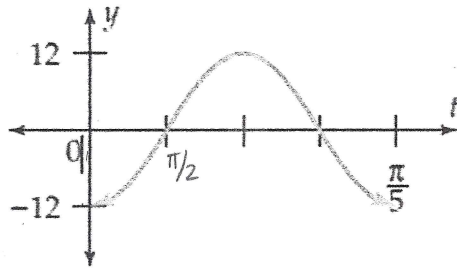


Give a Sine and Cosine function for each of the following graphs.

1.



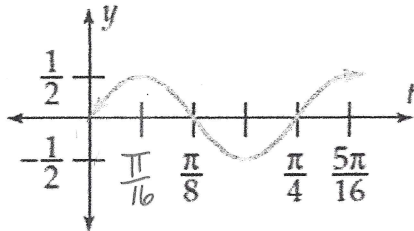
$$\frac{2\pi}{b} = \frac{\pi}{5}$$

$$b = 2\pi \cdot \frac{5}{\pi} = 10$$

Sine: $f(t) = 12 \sin(10(t - \pi/2))$ Cosine: $h(t) = -12 \cos(10t)$

2.

Period: $\frac{\pi}{4}$



$$\frac{2\pi}{\frac{\pi}{4}} = 2\pi \cdot \frac{4}{\pi} = 8$$

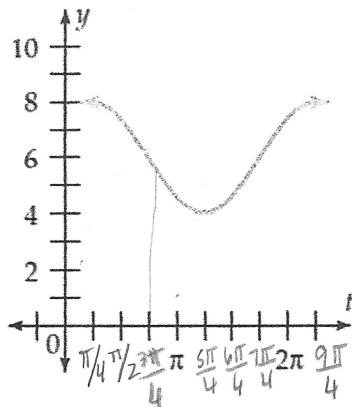
$$b = 8$$

Sine: $g(t) = \frac{1}{2} \sin(8t)$

Cosine: $h(t) = \frac{1}{2} \cos(8t - \pi/2)$
OR! $h(t) = \frac{1}{2} \cos(8(t - \pi/16))$

3.

#39
in book!



Period: 2π

$$\frac{2\pi}{b} = 2\pi$$

$$b = \frac{2\pi}{2\pi}$$

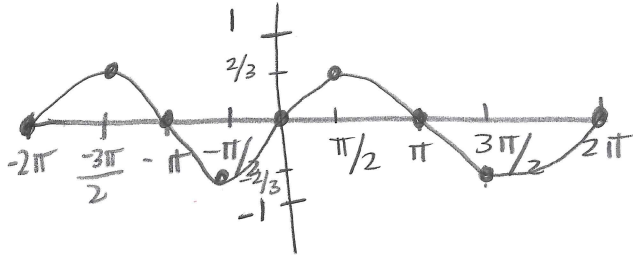
$$b = 1$$

Sine: $g(t) = -2 \sin(t - 3\pi/4) + 6$

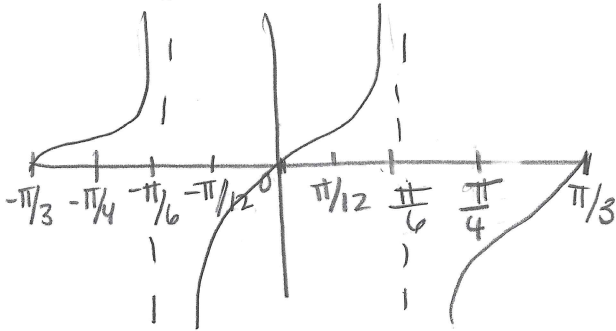
Cosine: $h(t) = 2 \cos(t - \pi/4) + 6$
 (under $\pi/4$)
 move a little

Sketch 2 periods of the graphs of each function.

4. $f(t) = \frac{2}{3} \sin t$ 2π so $[-2\pi, 2\pi]$



5. $g(t) = 2 \tan 3t$ $\pi/2$



$\rho: \frac{\pi}{3}$

$3t = \pi/2 \cdot \frac{1}{3}$
 $t = \frac{\pi}{6}$

$\frac{\pi}{3} \cdot \frac{1}{4} = \frac{\pi}{12}$

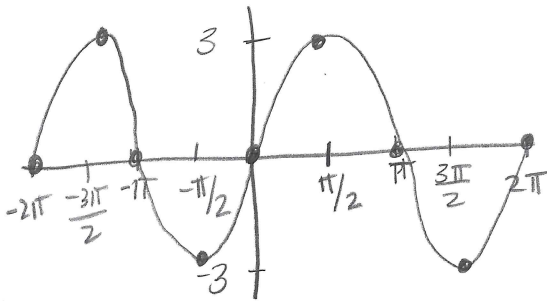
$3t = \frac{3\pi}{2} \cdot \frac{1}{3}$

$\frac{\pi}{12} + \frac{\pi}{12} = \frac{2\pi}{12}$

$t = \frac{3\pi}{6} = \frac{\pi}{2}$

$\frac{2\pi}{12} + \frac{\pi}{12} = \frac{3\pi}{12}$

6. $h(t) = 3 \cos(t - \pi/2)$

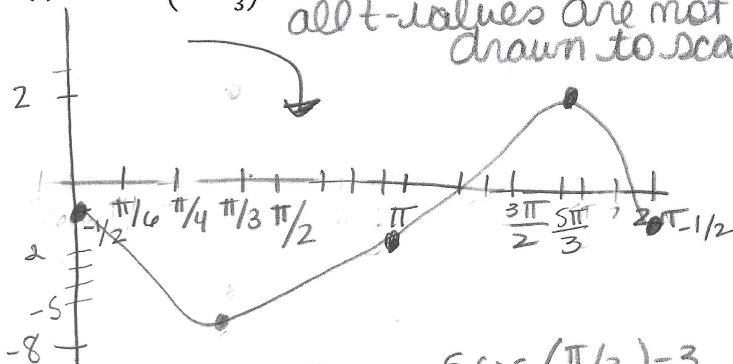


7. $m(t) = 5 \cos(t + \frac{\pi}{3}) - 3$

cos → period 2π

all t-values are not drawn to scale.

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



* you could go up just $\pi/3$.

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

$5 \cos(\frac{\pi}{3}) - 3$

$5/2 - 3 = -1/2$

$5 \cos(\frac{2\pi}{3}) - 3$

$5(-1/2) - 3 = -5/2 - 3 = -11/2$

$5 \cos(\frac{\pi}{3} + \frac{2\pi}{3}) - 3$
 $5 \cos(\pi) - 3 = 2$

$5 \cos(2\pi + \frac{\pi}{3})$

$5/2 - 3 =$

Match a graph to a function. Only one graph is possible for each function.

8. $f(t) = 3 \sin 2t$ $A=3$ $P=\pi$ D.

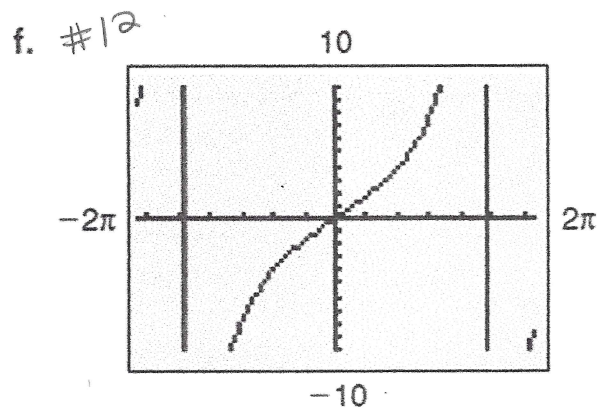
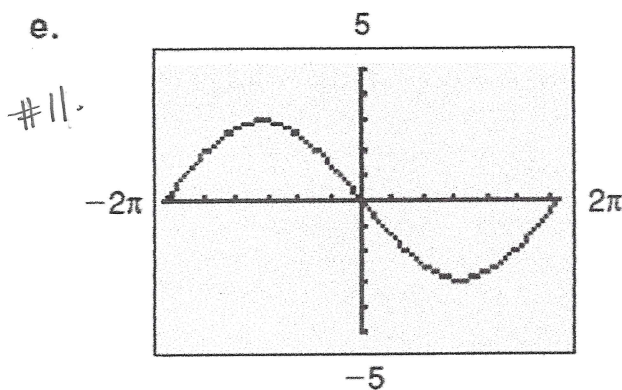
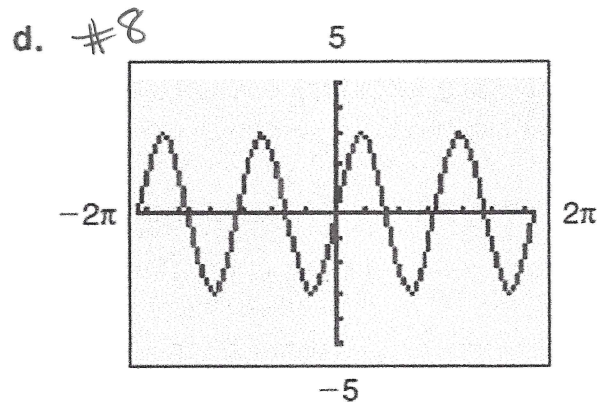
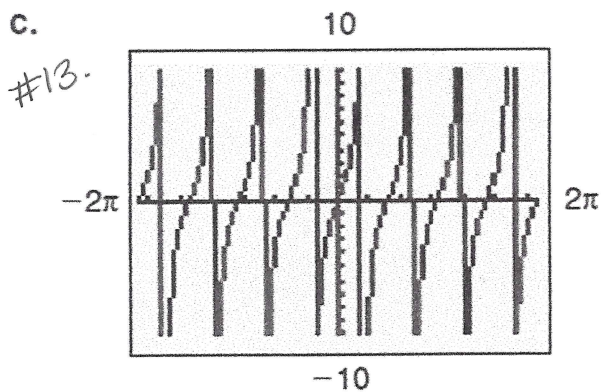
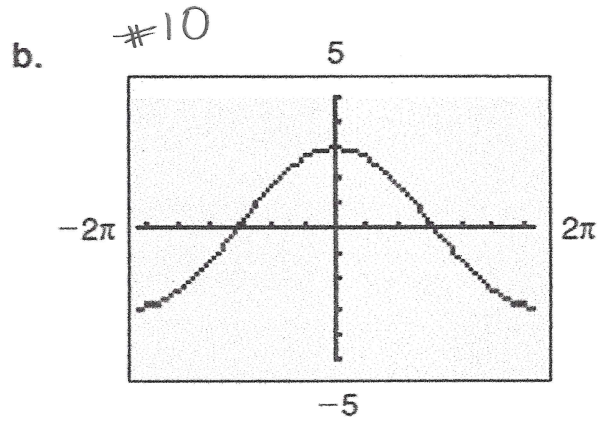
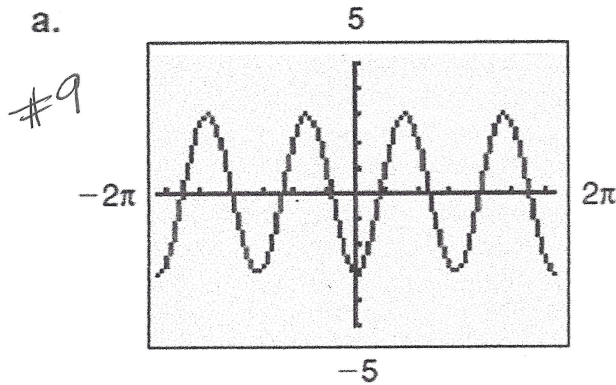
9. $f(t) = -3 \cos 2t$ $A=3$ $P=\pi$ \rightarrow reflection
A.

10. $f(t) = 3 \cos \frac{t}{2}$ $A=3$ $P=\frac{2\pi}{1/2} = 4\pi$ B.

11. $f(t) = -3 \sin \frac{t}{2}$ \rightarrow reflection
e. $A=3$ $P=4\pi$

12. $f(t) = 5 \tan \frac{t}{3}$ $\frac{\pi}{1/2} = 3\pi$
f.

13. $f(t) = 3 \tan 2t$ C.



$\frac{1}{3}t = \frac{\pi}{2}$
 $t = \frac{3\pi}{2}$