

1) Given $f(x) = x^2 + 2x - 1$, $g(x) = 4x + 2$, find each of the following and state the domain:

a) $(f + g)(x)$

b) $(f - g)(x)$

c) $(fg)(x)$

d) $\left(\frac{f}{g}\right)(x)$

e) $g(f(x))$

f) $f(g(-1))$

2) Given $f(x) = 2x + 1$, $g(x) = \sqrt{x - 1}$, find each of the following and state the domain:

a) $(f + g)(x)$

b) $(f - g)(x)$

c) $(fg)(x)$

d) $\left(\frac{f}{g}\right)(x)$

e) $g(f(x))$

f) $f(g(x))$

Given f , find f^{-1}

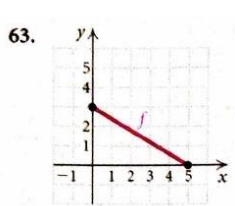
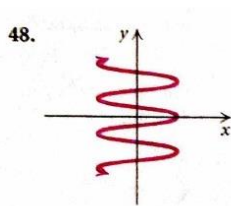
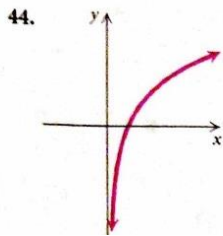
3) $f(x) = (x - 1)^2 - 2$

4) $f(x) = \sqrt{x^3 - 2}$

5) $f(x) = \frac{x + 1}{x - 3}$

6) $f(x) = \frac{x + 4}{x + 1}$

7) For each graph below, is f a function? Is f^{-1} a function? Is f one to one?



For each of the following verify that $f(x)$ and $g(x)$ are inverses using the definition of inverses.

8) $f(x) = x^2 + 1$
 $g(x) = \sqrt{x-1}$

9) $f(x) = \sqrt[3]{x^2 + 1}$
 $g(x) = \sqrt{x^3 - 1}$

10) $f(x) = (x - 3)^2 + 1$
 $g(x) = \sqrt{x - 1} + 3$

Graph each of the following functions.

12) $f(x) = 2(x-1)^2 + 3$

13) $f(x) = |-2x + 4| - 4$

14) $f(x) = 3(-x+1)^3$

15) $f(x) = (-2x+4)^3 + 1$

16) $f(x) = 2\sqrt{3x}$

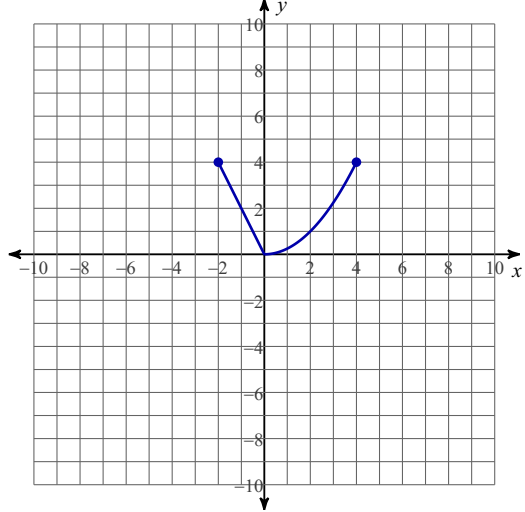
17) $f(x) = -2|x+1| + 3$

18) $f(x) = -\sqrt{\frac{1}{2}x-1} + 2$

19) $f(x) = -2\sqrt[3]{x}$

The graph of $f(x)$ is graphed below. Graph each function.

1) $f(x-3)+2$

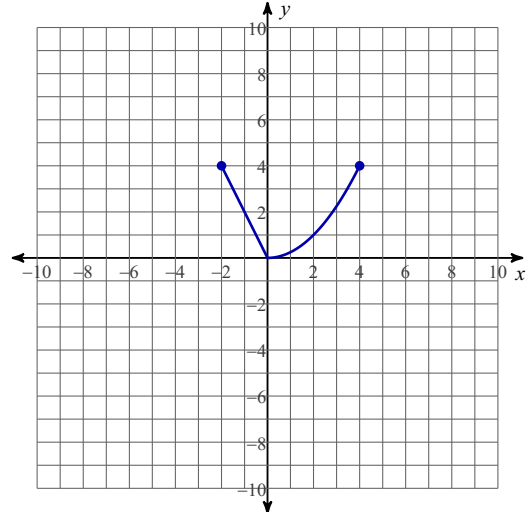


$f(x+5)-1$

2) $f(2x)$

$f\left(\frac{x}{2}\right)$

$f(-x)$



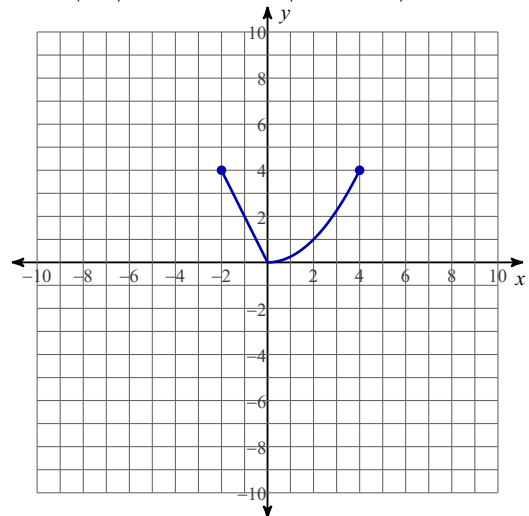
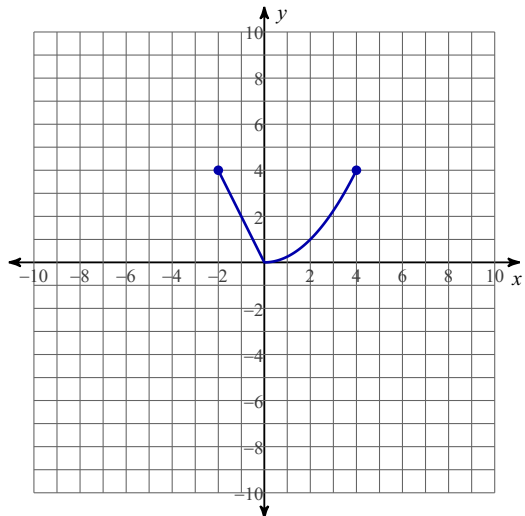
3) $2f(x)$

$\frac{1}{2} \cdot f(x)$

$-f(x)$

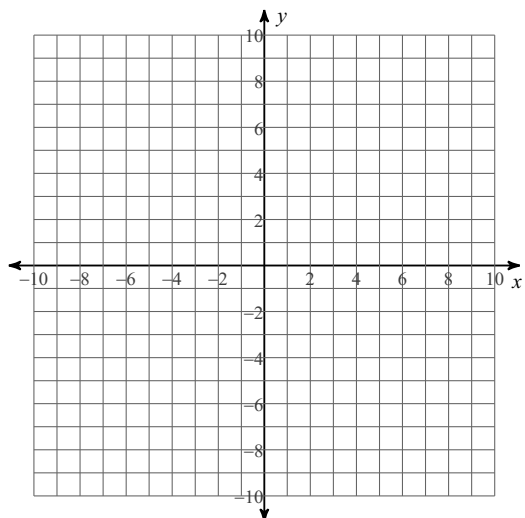
4) $-2f\left(\frac{1}{2}x\right)$

$-2f\left(\frac{1}{2}(x+3)\right)+5$

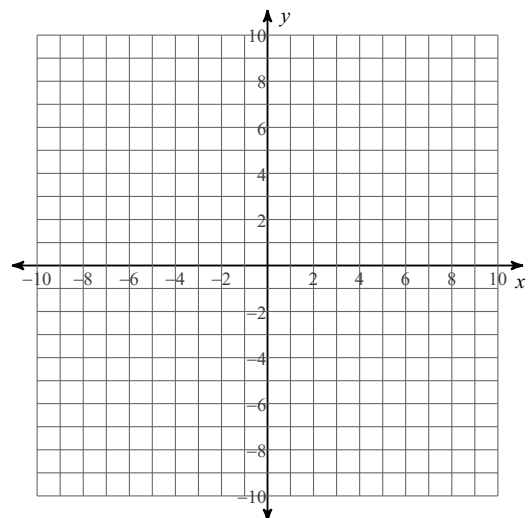


Some blank grids...

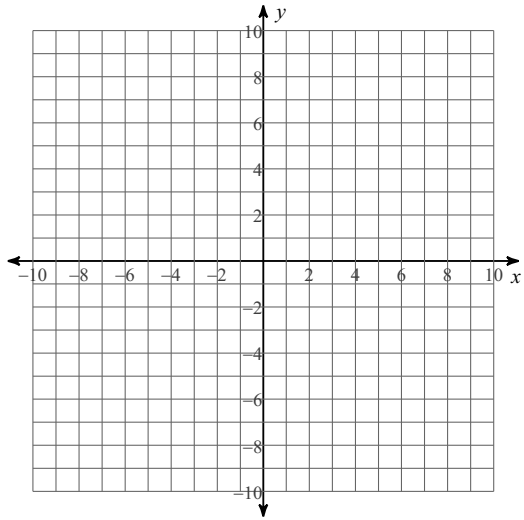
5)



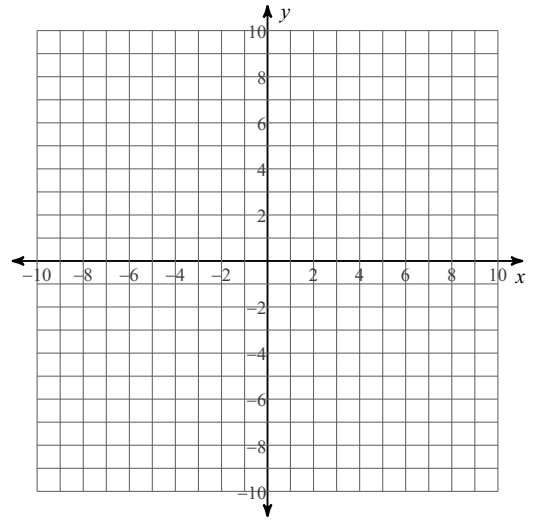
6)



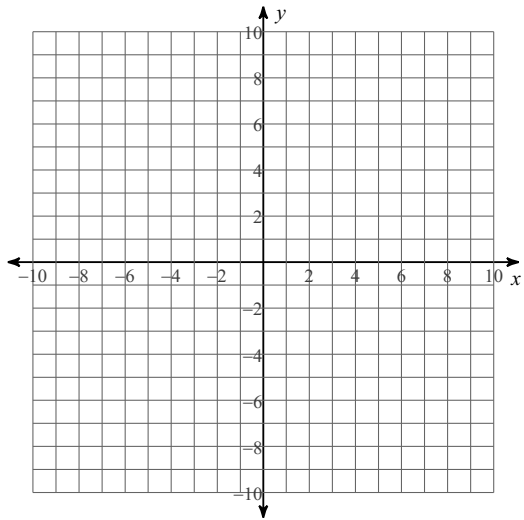
7)



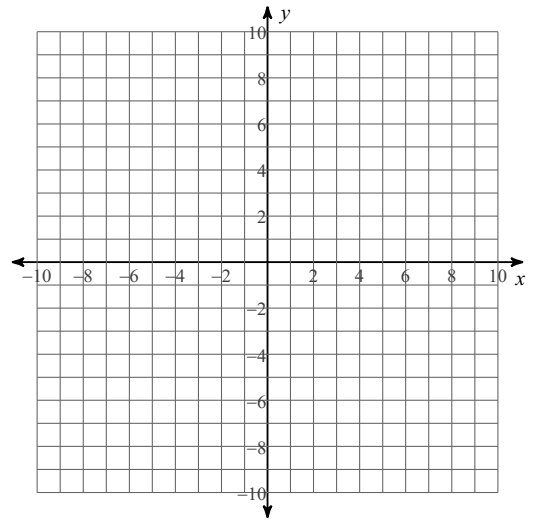
8)



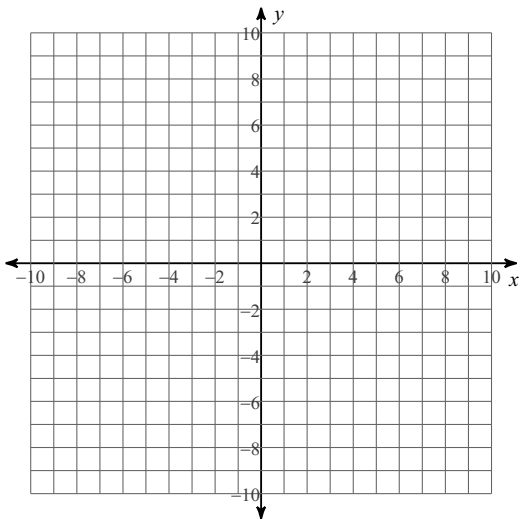
9)



10)



11)



12)

