Practice Test for 9-12-17 **NO CALCULATOR SECTION**

[1] Evaluate each expression.

[a] $1000^{-\frac{4}{3}}$ [b] $\left(\frac{49}{121}\right)^{\frac{1}{2}}$ [c] $\left(\frac{64a^3}{125b^6}\right)^{-\frac{1}{3}}$ [d] $\left(\frac{64c^8}{81d^{12}}\right)^{\frac{3}{4}}$

[2] Simplify each expression. Do not leave any negative exponents in your final answer.

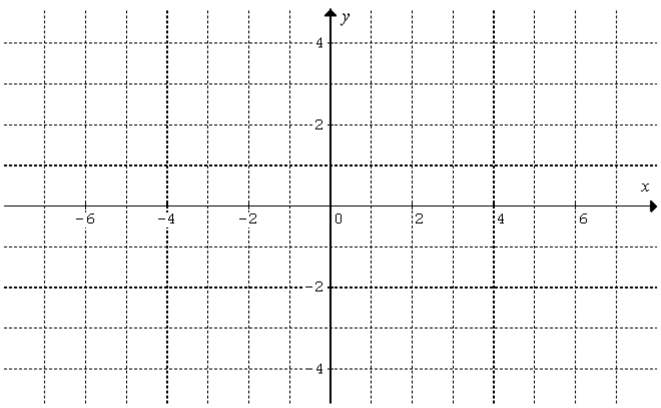
[a] $\left(a^3b^{-2}\right)^5\left(ab^4\right)^{-4}$ [b] $\frac{4x^3y^{-2}}{\left(5xy^{-3}\right)^3}\cdot\frac{25x^{-4}}{\left(12y^{-1}\right)^2}$ [c] $\frac{\left(2x^{-3}y^5\right)^3}{\left(x^{-2}\right)^4}\cdot\frac{\left(x^4y^{-3}\right)^{-2}}{\left(4y^{-1}\right)^2}$

[4] Perform the operation and simplify your answers.

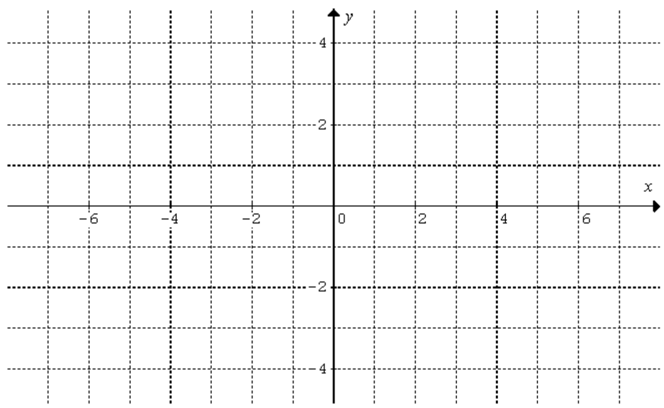
[a] $\frac{x^2-2x+1}{x^2+2x-3}\cdot\frac{x^2+7x+12}{x^2-6x+5}$ [b] $\frac{2x^2-5x-3}{3x^2+5x+2}\div\frac{2x^2+7x+3}{3x^2-x-2}$ [c] $4-\frac{2x}{3x+2}$

[5] Sketch each of the following.

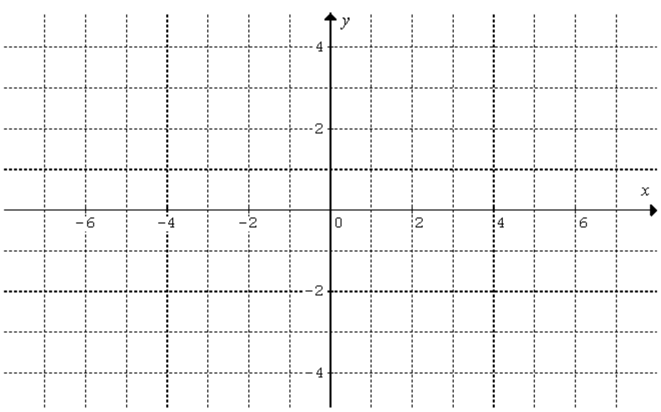
[a] $y=\left|x-3\right|-1$



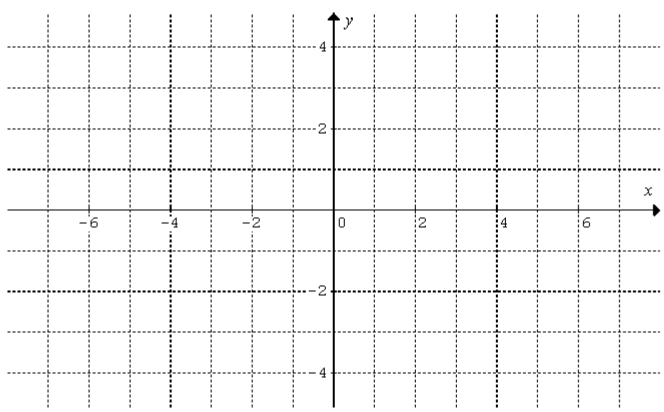
[b] $y=1-\left(x+2\right)^2$



[c] $y=-2+\sqrt{x+1}$

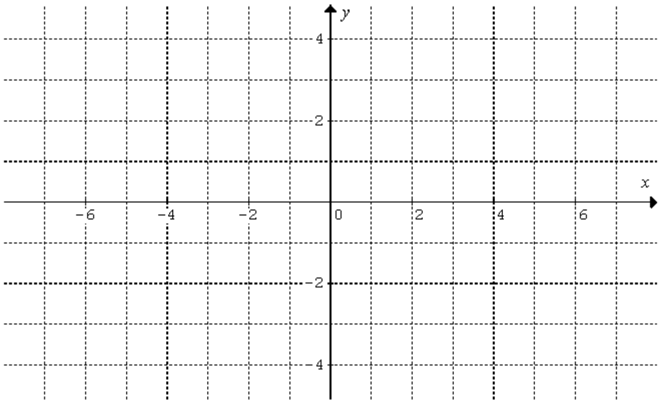


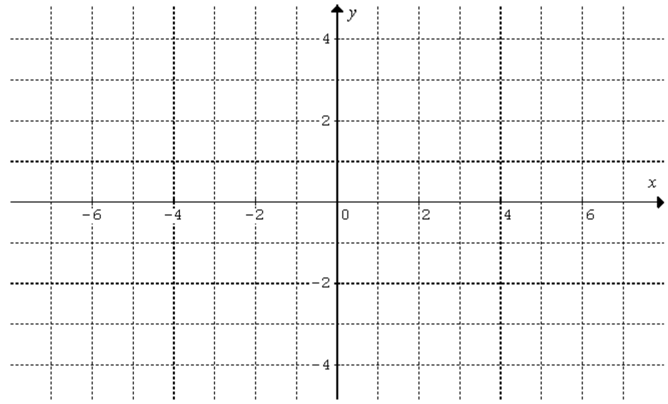
[d] $y=x^3-2$



[e] $y=\begin{cases} x+1, & x<1 \\ -2, & x\geq 1 \end{cases}$

[f] $y=\begin{cases} 3, & x\leq -1 \\ x, & -1<x<1 \\ 1-x, & x\geq 1 \end{cases}$

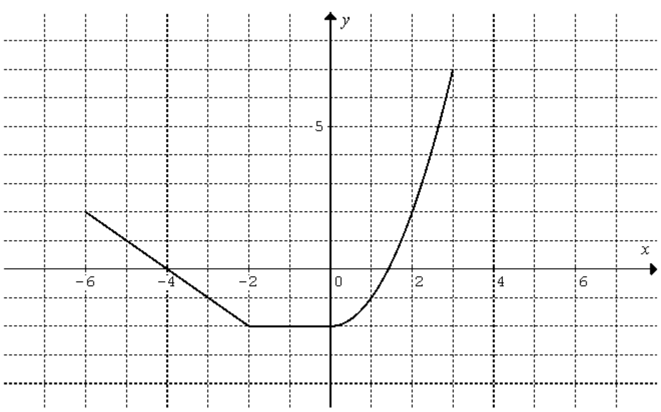


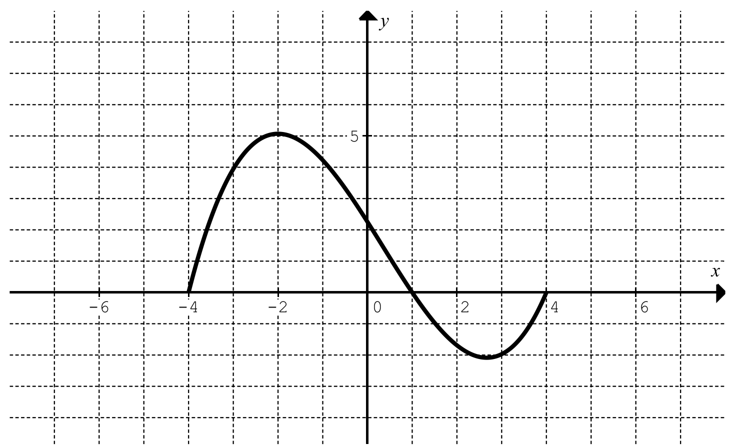


[6] State the domain of each function.

[a] $f(x)=\dfrac{1}{\sqrt{x}}$ [b] $f(x)=\dfrac{x-2}{x^2-9}$ [c] $f(x)=\sqrt{x^2+x-20}$ [d] $f(x)=\sqrt[3]{2x-5}$

[7] State the domain and range of the function represented by each graph.





[8] Given: $f(x)=x^2+3x$ and $g(x)=3x+5$, evaluate the following.

[a] $f(g(x))$ [b] $g(f(x))$ [c] $g(g(x))$ [d] $f(f(2))$

[9] For each of the following functions, find $f^{-1}(x)$, the inverse function.

[a] $f(x)=4x-5$ [b] $f(x)=\dfrac{2x-5}{4x+1}$ [c] $f(x)=x^3+1$

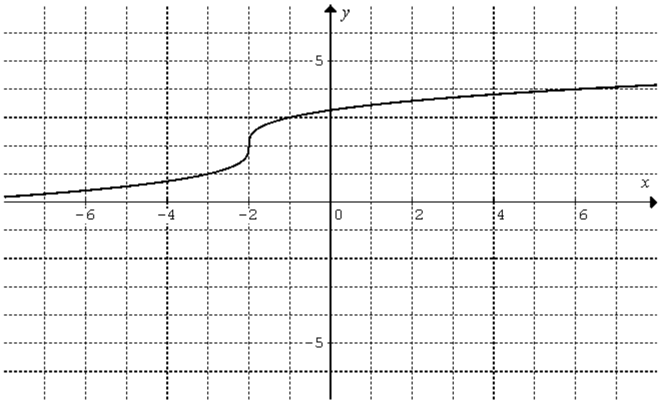
CALCULATOR SECTION

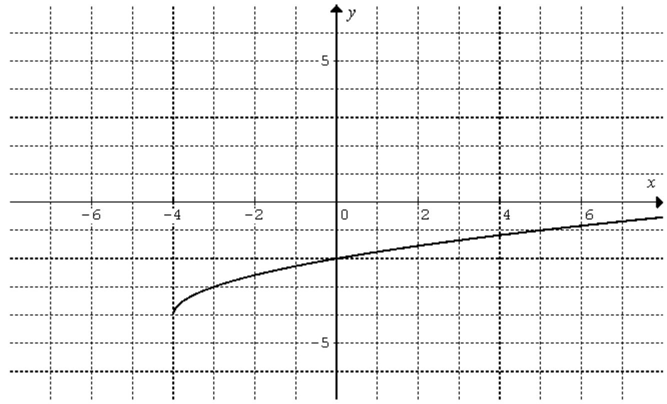
[10] Compute the average rate of change in each function over the given interval.

[a] $f(x)=x^2$ on $[-2,4]$ [b] $f(x)=x^2+2x+2$ on $[1,3]$

[c] $f(x)=x^2$ on $[a,a+h]$ [d] $f(x)=x^2+2x+2$ on $[a,a+h]$

[11] On each graph of $y = f(x)$, sketch the graph of $y = f^{-1}(x)$.



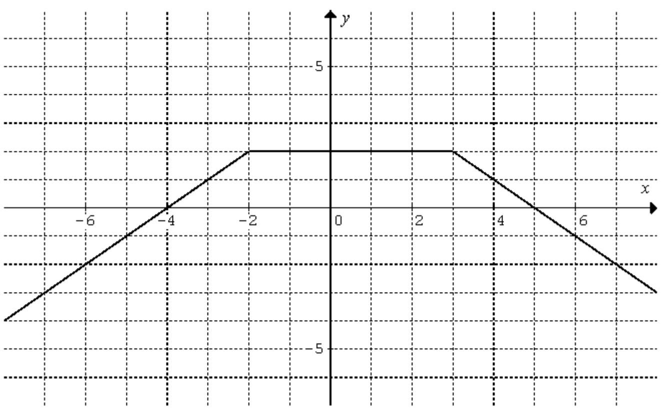


[12] Determine which functions are one-to-one.

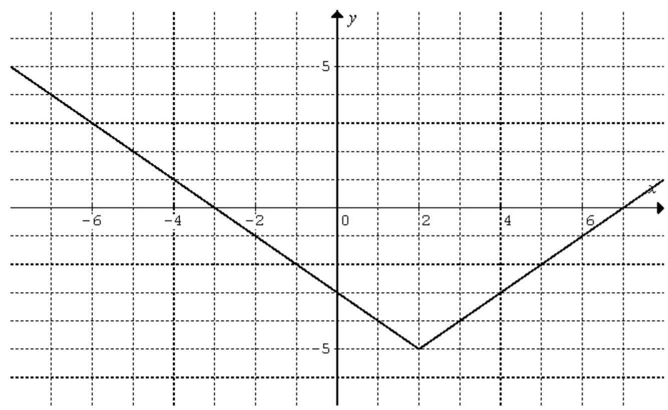
[a] $y = x^5 + 1$ [b] $y = \dfrac{x+1}{x-1}$ [c] $y = x^3 - x^2 - 1$ [d] $y = x^4$

[13] Consider the functions represented by these graphs.

$y = f(x)$



$y = g(x)$



[a] $f(g(2))$ [b] $f(g(-3))$ [c] $g(f(-3))$ [d] $g(f(6))$ [e] $f(f(4))$

[f] $g(g(0))$ [g] $g(g(g(4)))$