KEY

Quiz 1.1 to 1.3 Review #2
Pre-Calculus

Select the *best* answer.

1. Let $h(x)=\frac{5}{3x-2}$. Find $f(2x+3)$. $\frac{5}{3(2x+3)-2} = \frac{5}{6x+9-2} = \frac{5}{6x+7}$

2. Find the best viewing rectangle for a *complete* graph of $y=-2x^3-5x-14$.
[-5,5] [-40,10]

3. Find x so that the distance between the points $(-3,x)$ and $(6,-3)$ is 9. $9=\sqrt{(6+3)^2+(-3-x)^2}$ $9=\sqrt{9^2+9-6x+x^2}$ $81=x^2+6x+90$ $0=x^2+6x+9$ $0=(x+3)^2$ $x=-3$

4. Find the domain and range of the function $f(x)=x-\sqrt{x+2}$.
$D_x=[-2,\infty)$ $R_y=[-2.25,\infty)$

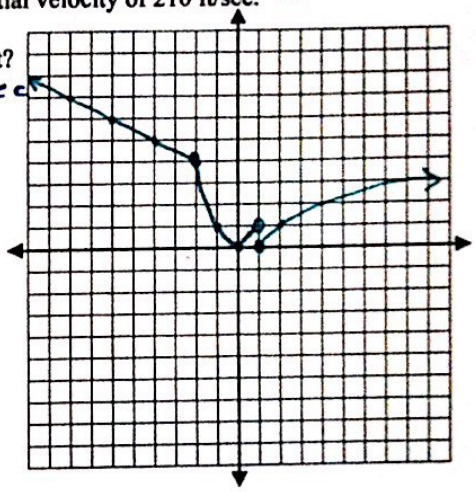
5. ~~Find the midpoints of the sides of the~~ triangle defined by the vertices $(2,5),(-3,8)$, and $(-1,5)$.
Determine whether this triangle is isosceles

6. Find the domain and range of the function $f(x)=\sqrt{x^2-3}$. $D_x=(-\infty,-\sqrt{3}]\cup[\sqrt{3},\infty)$ $R_y=[0,\infty)$

7. A rocket is shot straight into the air from the top of a 100 foot platform with an initial velocity of 210 ft/sec. $s(t)=-16t^2+210t+100$
   A. When will the rocket be 90 feet in the air? $t=13.17$ sec
   B. What is the maximum height the rocket and when will it reach this height?
   height = 787.06 ft when $t=6.56$ sec

8. Sketch a complete graph of the piecewise-defined function

$$f(x)=\begin{cases}\sqrt{x-1}, & \text{if } x\geq 1 \\ x^2, & \text{if } -2\leq x<1 \\ -\frac{1}{2}x+3, & \text{if } x<-2\end{cases}$$



11. Find a complete graph and the domain and range for $f(x)=\frac{x-3}{x}$.
$D_x=(-\infty,0)\cup(0,\infty)$
$R_y=(-\infty,1)\cup(1,\infty)$

12. Find a complete graph and the domain and range for $g(x)=x^2-3x+4$
$D_x=(-\infty,\infty)$
$R_y=[1.75,\infty)$

13. A picture with dimensions 8 by 10 inches is surrounded by a border of uniform width x. What is the width of the border when the border area is 32 square inches? $x=0.82$ in $A(x)=(8+2x)(10+2x)-80$ $A(x)=4x^2+36x$

14. Find the midpoints of the sides of a quadrilateral with vertices $(4,3),(5,-2),(-2,0)$, and $(-3,4)$.
$(9/2,1/2)$ $(3/2,-1)$ $(-5/2,2)$ $(1/2,7/2)$

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