PreCalculus
Cumulative Review 2

HSF-ID.C.8

#1) Albert hits a fastball. The table below shows the height from the ground of the baseball over time. Graph the data with a friendly window. Record it below.

Time (sec)	0	0.25	0.5	0.75	1	1.25
Distance (ft)	2	20	34	44	50	52

a. Record a friendly window.

```
WINDOW
 Xmin=
 Xmax=
 Xscl=
 Ymin=
 Ymax=
 Yscl=
 Xres=1
```

b. What type of regression model would be most appropriate?

e. Find the times (to 3 decimals) at which the ball will be 10 feet in the air.

c. Use regression to write the equation of the model.

f. When (to 3 decimals) will the ball hit the ground?

d. Predict the height (to 3 decimals) of the baseball at 2.0 seconds.

g. What does the y-intercept represent? (Sentence answer).

#5) If $f(x) = -3x + 10$ and $g(x) = 4x^3 + x^2 + 5$, find the following:

$f(g(0)) =$

#6) Use the graph of the function to determine at least one zero, then find the exact values of all the zeros using the Factor Theorem.

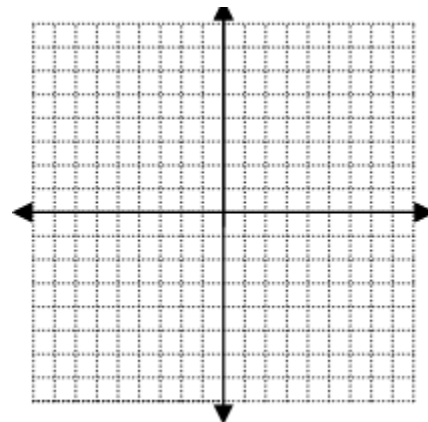$$f(x) = 10x^3 - 31x^2 - 76x + 160$$

WINDOW
Xmin=-5
Xmax=5
Xscl=1
Ymin=-100
Ymax=250
Yscl=50
↓Xres=1

Answer the following questions about the given function.

$$y = 3|-5x - 10| - 1$$

#7) Name Function:

#8) Translation:
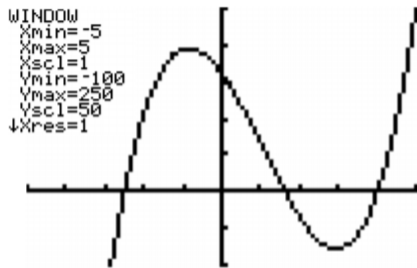
#9) Scale:

#10) Reflection:

#11) Sketch Graph

#12) Solve.
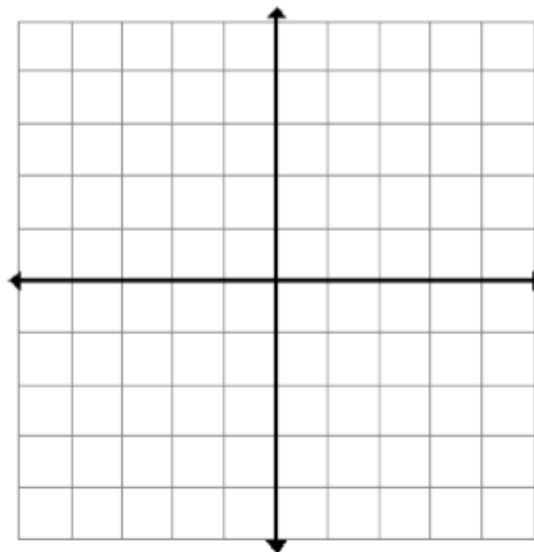$$\frac{3x}{x+2} = \frac{-7-8x}{x^2-3x-10} + \frac{1}{x-5}$$

Use $f(x) = \frac{5x}{x^3-12x^2+35x}$ to answer the following questions.

#15) Vertical Asymptotes/Holes:

#16) x-intercepts:

#17) Horizontal/Slant Asymptotes:

#13) Simplify.
$$\frac{x-3}{\sqrt{x}-\sqrt{x-7}}$$

#18) Graph it

#14) Evaluate

$\log_5 125$

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Use the information given to answer the questions on this page.

The formula for the path of a flying bullet is given: $h = -9.8t^2 + vt + s$ where $h =$ height of object after t seconds, $v =$ initial velocity in meters per second and $s =$ starting height in meters.

Bob shoots a gun straight up with an initial velocity of 500 meters per second and a starting height of 1 meters.

#19) What is the equation that represents this situation?

#20) What does the y-intercept represent to Bob?

#21) What do the x-intercepts represent to Bob?

#22) How high is the bullet after 3 seconds?

#23) How long will it take for the bullet to hit the ground after it is fired?

#24) What is the maximum height of the bullet?

#25) At what time(s) will the bullet be 700 meters in the air?